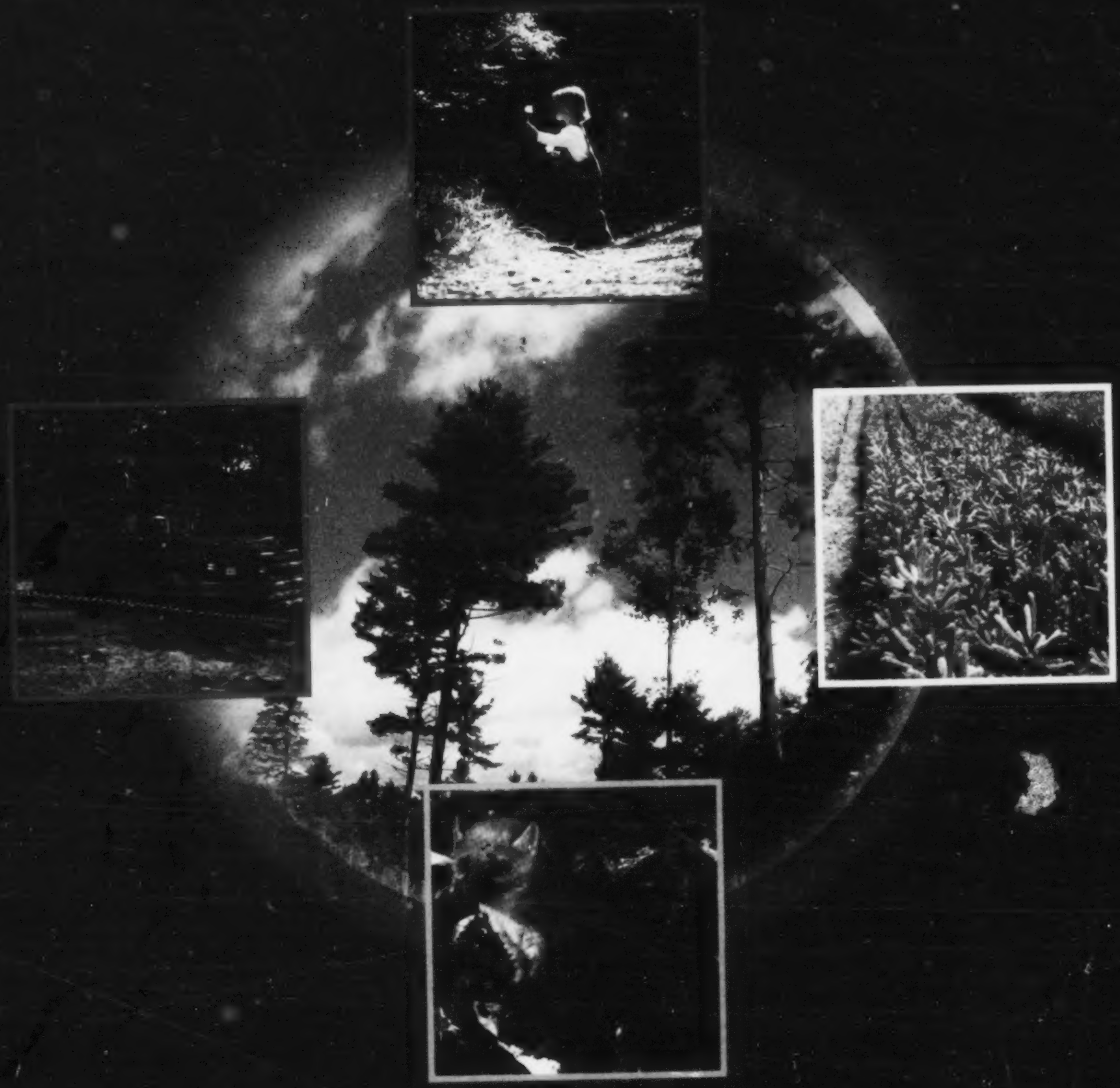
Ontario

Annual Report on Forest Management 2002/2003



FOREST INFORMATION SERIES

Annual Report on Forest Management

For the year April 1, 2002 to March 31, 2003

Ontario

Minister of Natural Resources of the Province of Ontario

To his Honour
The Lieutenant-Governor of the Province of Ontario

May it please your Honour

The undersigned begs respectfully to present to your Honour the Annual Report on Forest Management for the fiscal year beginning April 1, 2002 and ending March 31, 2003.

David Ramsay
Minister

May, 2005

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Executive Summary

In 1994, the Environmental Assessment (EA) Board in Ontario issued its decision on the *Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario*. The EA Board's decision approved the timber management process described by the Ministry of Natural Resources (MNR), with 115 binding terms and conditions. One of these conditions required the MNR to table an annual report on forest management in the provincial legislature.

This is the eighth of MNR's annual reports. It covers the fiscal year April 1, 2002 to March 31, 2003. Because of the time period when data was collected, some of the information refers to the 2001/02 fiscal year.

The forest management legislative and policy framework of the MNR has undergone significant improvements in the last decade. The *Crown Forest Sustainability Act* (CFSA), which came into effect in 1995, requires anyone operating in an Ontario Crown forest to ensure the long-term health of the forest so that the benefits from the province's forests are available to future generations.

The MNR has instituted changes affecting the responsibilities of the forest industry, the opportunities for the general public to become involved in forest management planning, the system for licensing forest companies, the fees paid to harvest wood, and has stabilized the dedicated funding for forest renewal.

Ontario has 5.6 million hectares of productive forest land under private ownership, 14 percent of the province's inventoried productive forest landbase. Private forests account for 13.5 percent of Ontario's growing stock, including approximately one-half of the volume of hard maple and "other hardwoods". In 2002, nine percent of the volume of conifers and 28 percent of the volume of deciduous species processed in Ontario originated from private woodlands. This represents approximately 17 percent of the total wood volume processed.

Ontario's 107.6 million hectare area is comprised of about 88.7 million hectares of land and 18.9 million hectares of water. The Area of the Undertaking (AOU), where most forest management activities on Crown land occur, totals 38.5 million hectares of forest. Productive forest on Crown land in the AOU covers about 33.6 million hectares, with 21.8 million hectares of this area eligible for forest management activities. The focus of this annual report is to provide information on the activities carried out on the eligible 21.8 million hectares of Crown forest in 2002/03.

As of April 1, 2002, the AOU was divided into 53 management units. A fifty-fourth management unit is comprised of all the pieces of Crown land in southern Ontario outside the AOU.

The CFSA requires that an approved Forest Management Plan be in place for each management unit before any forest management operations take place. A Forest Management Plan covers a 20-year period and describes the values of the forest in a management unit, as well as the harvesting, renewal, and other forest management activities that will occur. These plans are renewed every five years through a process that provides opportunities for public input. In 2002, 6 Forest Management Plans were approved and implemented.

The effective period of the approval for timber management activities under the Environmental Assessment Act covers nine years (1994 to 2003). One of the conditions of this approval requires the MNR to undertake a comprehensive review of the forest management activities covered by the approval, and to submit a report containing its findings for amending and extending the approval.

Under the Timber EA Renewal Project efforts to prepare the report, initiated in 2000/2001, culminated in the document "A Review by the Ministry of Natural Resources Regarding the Class Environmental Assessment for Timber Management on Crown Lands in Ontario" dated July 17, 2002. The report was submitted to the Ministry of the Environment (MOE). Draft conditions were prepared by MOE based on MNR's recommendations and in consideration of the views of stakeholders. MOE then conducted public consultation on the draft conditions in preparation for a final decision.

Efforts on the Forest Management Planning Manual Revision Project, initiated in June 2001, were temporarily scaled down as the Timber EA Renewal Project took priority. Following the submission of the review, the writing team made progress preparing initial drafts of components to be included in the revised FMPM.

The *Forest Information Manual* is one of four regulatory manuals required by the CFSA. This manual describes the requirements for exchanging information concerning the management of Crown forests between the forest industry and the MNR. The *Forest Information Manual* was approved into regulation on April 25, 2001, and implementation efforts continued through the 2002/03 fiscal year. The Forest Information Portal, a web-based system to more effectively and easily exchange digital information about forest management, was introduced for use in 2002. The Portal supported the submission of information for the 2002/03 management unit annual reports from forest industry to the MNR.

The CFSA provides for two types of licences: Forest Resource Licences (FRLs) and Sustainable Forest Licences (SFLs). In 2002/03, there were a total of 3,569 licences in place in Ontario.

Forest management operations require a complex system of primary and secondary roads, the cost of which is now borne largely by forest companies. In 2002/03, 566 kilometres of primary and secondary roads were constructed in Ontario forests to serve forest management activities. Maintenance work was carried out on another 18,208 kilometres of roads. A total of 3,342 kilometres of roads had access controls, while approximately 416 kilometres of forest roads were abandoned in 2002/03.

The figures used for disturbance and harvest area and volume in this report are from 2001/02, since data collection on harvesting and other disturbances is not completed until the year following the disturbance. In 2001/02 forest fires occurred on only 2,059 hectares of productive forest in the AOU, resulting in a loss of 110 thousand cubic metres of wood. There were less than 7,367 hectares of insect-infested forest in the AOU where significant mortality occurred, but almost 12.7 million hectares on which significant growth loss occurred due to insect damage, resulting in a total loss of almost 2.5 million cubic metres of wood. Annual volume losses from disease in the AOU in 2001/02 were approximately 12.9 million cubic metres, while weather damage losses of almost 7.7

million cubic metres occurred on 5.8 million hectares of forest.

Harvesting activities took place on 194,620 hectares of forest in 2001/02. The clearcut silvicultural system was used on 88.6% of the area harvested. In 2001/02, 35 management units within the Boreal Forest reported average clearcut sizes from 22 to 1,965 hectares. Maximum clearcut sizes reported ranged from 114 to 4,865 hectares. Ten management units within the Great Lakes-St. Lawrence Forest reported average clearcut sizes from 4 to 172 hectares. Maximum clearcut sizes ranged from 6 to 628 hectares. A total of approximately 22.2 million cubic metres of wood was harvested within the AOU in 2001/02.

The CFSA requires a portion of the money received from forest companies to be designated exclusively for forest renewal activities. In 2002/03, the Government of Ontario received a total of approximately $195 million from timber sales, of which approximately $104 million went directly to funds designated for the maintenance and renewal of the forest, and for work associated with ensuring the future of the forest.

Renewal of the forest occurs both naturally and with assistance. In 2002/03, natural regeneration, both even and uneven-aged, took place on 78,044 hectares of land. Assisted renewal was carried out on 109,391 hectares. Site preparation activities, through mechanical means, use of herbicides, and prescribed burning, were completed on another 68,031 hectares. Tending activities were also conducted to improve the quality and growth of some areas of the forest. During 2002/03 tending activities, such as thinning, were carried out on 95,513 hectares of forest. There were no protection activities (e.g., aerial application of insecticides) reported for 2002/03.

Free-To-Grow (FTG) assessments are an effectiveness monitoring tool that provides an indication of the success of silvicultural treatments and information to project the future forest condition. In 2002/03, approximately 225 thousand hectares were assessed in 41 management units. Of the total area assessed for FTG, 77 percent was approved as having achieved the FTG standard within a set time period.

This is the fifth annual report to provide results of industry compliance self-monitoring and reporting. The forest industry is required to report the results of their inspections to the MNR, which conducts inspections to verify all instances of non-compliance reported by companies. The MNR also carries out random and other planned inspections of forest operations. Of the 9,309 inspections undertaken across the province, companies conducted 7,455 and the MNR completed 1,854. The vast majority of the inspections reported compliant operations. A total of 177 remedial actions were required by the MNR, including warnings, "stop work" orders, and administrative penalties.

All management units within the AOU must be audited at least once every five years. In 2002/03, Independent Forest Audits were undertaken on 10 forest management units and resulted in the preparation of 9 audit reports (two management units were amalgamated on April 1, 2002 and therefore were combined into one audit report). Audit reports were prepared for Algonquin Park, and the Crossroute, Hearst, Nagagami, Northshore, Pineland-Martel, Romeo Mallette, Sapawe, and Superior Forests.

Forest certification involves an independent third party evaluating forest management systems and/or operations against ecological, economic and social standards. During the 2002/03 fiscal year, 7 management units in the province obtained International Organization for Standardization 14001 registration of their operations. The Crossroute Forest, managed by Abitibi Consolidated Company of Canada, became the first unit in the province to become certified under both the ISO registration and CSA certification systems. In addition, all previously registered/certified forest units continued efforts to demonstrate ongoing conformance to their selected certification systems during the fiscal year.

This report documents for 2002/03 the efforts of MNR districts, the forest industry and First Nations communities to implement ways of achieving a more equal participation by Aboriginal peoples in the benefits derived from forest management activities.

A primary monitoring responsibility of the MNR is to assess the effects of forest management activities on the forest ecosystem over the long term. The final chapter of this report details policies, procedures, scientific studies and research that the MNR is undertaking to ensure that forest management guides, data, methodologies, and underlying science are available to effectively monitor and manage forest management activities.

Chapter 1

Introduction

Management of Ontario's forests has evolved through past decades from managing for timber to stewardship for all the values of the forest. With the 1995 introduction of the *Crown Forest Sustainability Act* (CFSA)[1], Ontario adopted a policy of managing Crown forests according to the principles of sustainable forest management. Large, healthy, diverse, and productive forests and their associated ecological processes and biological diversity are conserved for future generations through the balancing of the environmental, economic and social components of forest sustainability.

Timber Class EA Approval

Forest management has also been guided by the *Environmental Assessment Act*. In 1988, the Environmental Assessment (EA) Board began an assessment of the Crown land timber management planning process of the Ministry of Natural Resources (MNR), the agency responsible for forest management in Ontario. Six years later, after extensive public hearings, the Board released its *Reasons For Decision And Decision, Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario* (Timber Class EA approval) for a large part of the province, referred to as the Area of the Undertaking. The EA Board approved the MNR's planning process for Crown forests with 115 terms and conditions. A stipulation was that the MNR prepare an annual report to provide the Legislature and the public with information on Ontario's Crown forests.

Annual Report on Forest Management

This is the eighth annual report on forest management, covering the period April 1, 2002 to March 31, 2003. Note that information on forest disturbances, such as harvesting, forest fires, and insects, is from 2001/02. Disturbed areas are mapped and inventoried in the fall of the year the disturbances occurred, to allow time to complete information gathering. Therefore, collection of data on disturbances is completed too late in any given year for it to be included in a report on activities during that same year.

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[1] All acronyms used in this report are defined in an appendix at the end of the report. Literature references are listed in an appendix at the end of the report.

Updated Data and Information

New or updated data and information submitted since the previous *Annual Report On Forest Management* are included in this report. When referenced, errors or omissions noted since the publication of the previous report are also corrected or updated in this report. Five-year tables and graphs are included in this report to provide updated information and a means to view and assess trends in the data.

Overview

With this annual report, the MNR provides information to help in understanding how Ontario's Crown forests are being managed, as well as baseline information to compare with future forest management activities and annual reports. Chapters 1 and 2 provide background for the annual report and a summary of the forests of Ontario. The legislative framework which regulated forest management activities in 2002/03 is outlined in chapter 3. In chapter 4, summary of the forest industry and government revenue generation is presented. A detailed description of forest management activities, and the systems employed by MNR to monitor forest sustainability are provided in chapters 5 through 8. Chapter 9 presents an update on the MNR's progress in negotiations with Aboriginal peoples regarding opportunities for increased participation in the benefits of forest management. The report concludes with progress reports on MNR's research, scientific studies, and technical and policy development programs.

Other Information Sources

Other documents are available to provide information about forest management in Ontario. They include:

- the *Reasons For Decision And Decision, Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario*, which contains the reasons for the approval of the forest management planning process, and the terms and conditions that form part of the Timber Class EA approval;
- the *Crown Forest Sustainability Act*, enabling legislation which provides for the regulation of forest planning, public involvement, information management, operations, licensing, trust funds for reforestation, processing facilities, remedies and enforcement;
- the *Policy Framework for Sustainable Forests*, which lays out the principles for managing forests sustainably in Ontario;
- the MNR's *Statement of Environmental Values*, which sets out the environmental principles that govern the MNR's management of Ontario's natural resources;
- the *Forest Management Planning Manual for Ontario's Crown Forests*, which provides direction for all aspects of forest management planning for management units in the Area of the Undertaking;
- the *Forest Operations and Silviculture Manual*, which is a compendium of guidance and direction for the conduct of operations authorized by approved FMPs;
- the *Scaling Manual*, which provides standard instructions for determining the quantity, quality and movement of Crown timber harvested in Ontario;
- the *Forest Information Manual*, a technical document that describes the requirements and standards for information needed to support forest management planning on Crown lands in Ontario;
- the *Forest Resource Assessment Policy*, which provides provincial direction for the assessment of Ontario's Crown forest resources. This policy supports the provisions in the CFSA for determining forest sustainability and managing Ontario's Crown forests in a sustainable manner.
- the *Forest Resources of Ontario 2001*, a snapshot of statistics on the state of Ontario's forests;

- the *State of the Forest Report, 2001*, the first such report on the condition of Ontario's forest resources, for the period 1995-2000 (as required by Appendix 22 of the Timber Class EA approval, the CFSA, and the *Forest Resource Assessment Policy*); and,
- Ontario's forest management guides, which include technical considerations, standards, guidance, and performance targets used during the preparation and delivery of FMPs. They may also include suggestions on the best ways of carrying out forest management operations, sometimes referred to as "best management practices".

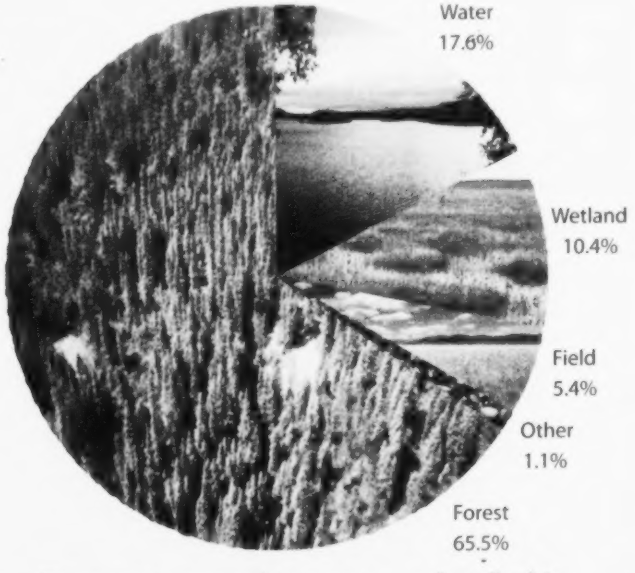
Further information on these information sources, and download of electronic versions of many of these documents, is available from the Forest Management portion of the MNR's website: http://ontariosforests.mnr.gov.on.ca/spectrasites/internet/ontarioforests/publications.cfm

Chapter 2
Forests of Ontario

Throughout this document, Crown land refers to land owned by the province for the people of Ontario and, in general, managed by the MNR. Statistics found in this chapter are from provincial inventories updated in 2001, and reflect changes resulting from Ontario's Living Legacy program. *The Forest Resources of Ontario 2001* should be consulted for a more complete description and summarization of the provincial inventories.

Ontario's 107.6 million hectare area is comprised of about 88.7 million hectares of land and 18.9 million hectares of water. Figure 2a illustrates the broad land classes in Ontario. Non-productive and productive forests comprise over 65 percent of the province. This is significantly higher than the comparable total for Canada, where forests represent only 42 percent of the country's area.

Figure 2a Land classes of Ontario



Three major ownership groups are described in this report - Crown, parks, and private or other owners. Seventy-nine percent of the province's area is Crown or publicly owned land and water. Provincial and national parks cover an additional eight percent, and privately-owned land and water encompasses the remaining 13 percent.

For forest management purposes, the province may be partitioned geographically, depending on the context. Subdivisions commonly referenced in this report include:

- Ecological Subdivisions
  - Forest Regions
  - Ecological Land Classification (ELC) System
- Administrative Subdivisions
  - Management Zones
  - MNR Administrative Regions and Districts
  - Management Units

Ecological Subdivisions

Forest Regions of Ontario

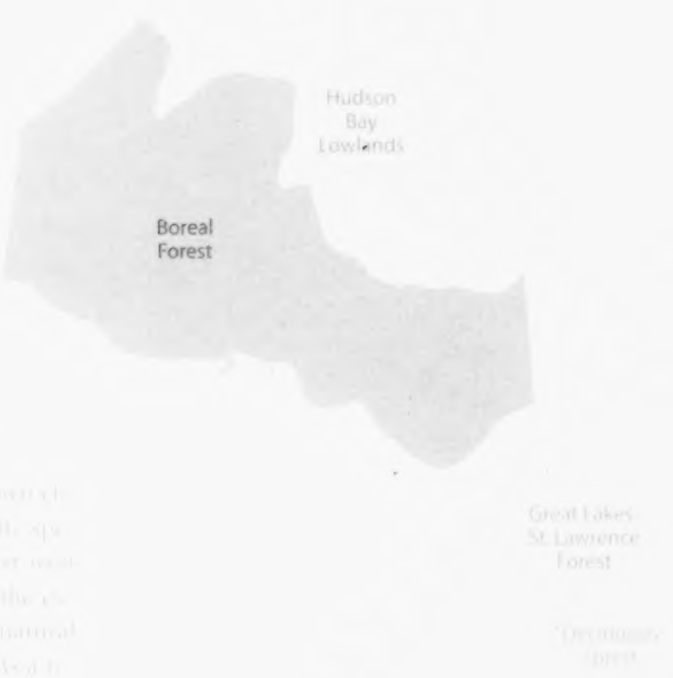
Four major forest regions are represented in Ontario – the Deciduous Forest region in southern Ontario, the Great Lakes-St. Lawrence Forest region in southern and central Ontario, the Boreal Forest region in Northern Ontario, and the Hudson Bay Lowlands in the far north. Over 90 percent of Ontario's population lives within the Great Lakes-St. Lawrence and Deciduous forest regions.

Each forest region is characterized by its own climate, forest ecosystems, and associated wildlife species. North-south shifts in temperature and east-west gradients in precipitation largely determine the extent of these forest regions. Broad zones of natural transition also occur between forest regions. As a result, certain tree species may appear in what seem to be inappropriate forest regions. For example, maple or white pine can be found within the southern reaches of the Boreal Forest.

A map of the forest regions of Ontario is shown in Figure 2B.

[illegible] is a large, low-relief expanse of wetland, one of the largest in the world. With an area of 25.7 million hectares, it is comprised of both treed and open muskeg (74 percent) dotted with thousands of small lakes and ponds. Forest cover is less than 17 percent and is typified by stunted tamarack (also known as larch) and black spruce growing along riverbanks and other well-drained areas. The Hudson Bay Lowlands support a great variety of wildlife including polar bears, geese, and other animals normally associated with Arctic habitats. The Hudson Bay Lowlands are greatly affected by a cold northern climate and contain all of Ontario's tundra. The region also contains Ontario's largest park, the 2.4 million hectare Polar Bear Provincial Park. Figure 2C shows an aerial view of a landscape typical of the Hudson Bay Lowlands.

Figure 2B



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Ecological Subdivisions

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The Hudson Bay Lowlands is a large, low-relief expanse of wetland, one of the largest in the world. With an area of 25.7 million hectares, it is comprised of both treed and open muskeg (74 percent), dotted with thousands of small lakes and ponds. Forest cover is less than 17 percent and is typified by stunted tamarack (also known as larch) and black spruce growing along riverbanks and other well-drained areas. The Hudson Bay Lowlands support a great variety of wildlife including polar bears, geese, and other animals normally associated with Arctic habitats. The Hudson Bay Lowlands are greatly affected by a cold northern climate, and contain all of Ontario's tundra. The region also contains Ontario's largest park, the 2.3 million hectare Polar Bear Provincial Park. Figure 2c shows an aerial view of a landscape typical of the Hudson Bay Lowlands.

Figure 2b Forest regions of Ontario.

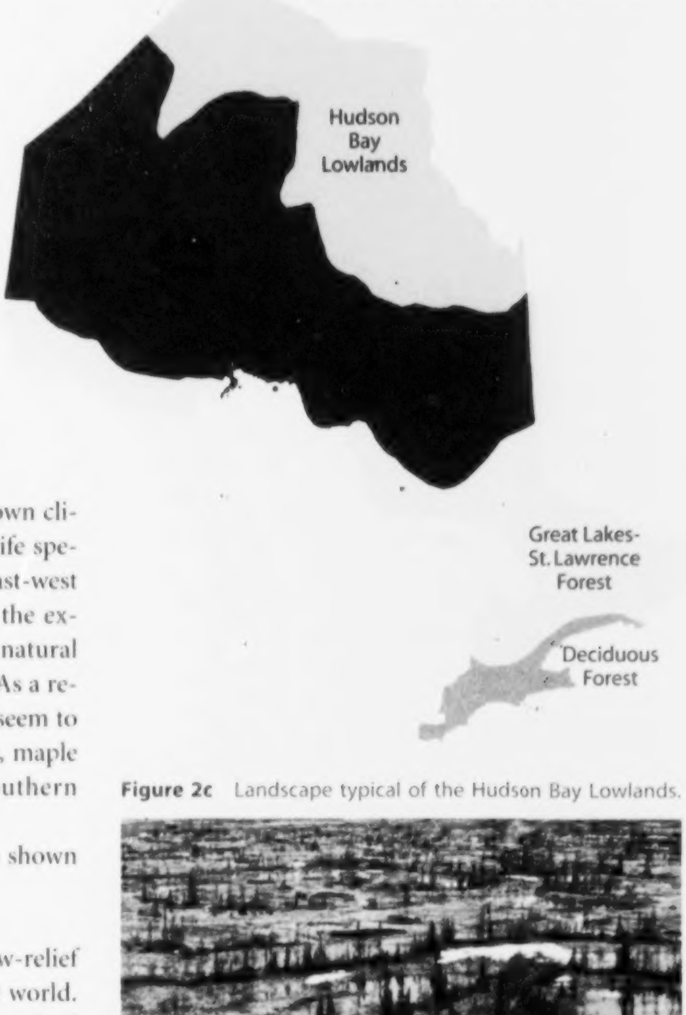


Figure 2c Landscape typical of the Hudson Bay Lowlands.

The Boreal Forest is a world-wide band of conifer-dominated forest stretching across Scandinavia, Russia, Alaska, and northern Canada. In Ontario, the Boreal Forest region extends from the northern limits of the Great Lakes-St. Lawrence Forest to the Hudson Bay Lowlands. With an area of 49.8 million hectares, this forest region is, by far, the largest in the province. In the Boreal Forest, tree species are often associated with particular soil types and terrain conditions. For example, black spruce and tamarack are often found in poorly-drained areas, while trembling aspen, white birch, and jack pine grow on well-drained sites. Black spruce comprises 50 percent of all tree species in the Boreal Forest by growing stock volume.

The boreal softwoods (jack pine, black spruce, white spruce, balsam fir and tamarack) and intolerant hardwoods (trembling aspen, white birch, and balsam poplar) are generally even-aged in character. Boreal forests are characterized by natural disturbance, and are heavily influenced by the size, intensity, and frequency of fires that have burned across the landscape. Winds also affect forest conditions by blowing down trees or forest stands. Insects can defoliate large areas of forest. During the last 80 years, timber harvesting and forest fire suppression have affected the tree species mixture and age class structure of the Boreal Forest.

Figure 2d shows a jack pine stand found within the Boreal Forest.

The Great Lakes-St. Lawrence Forest region extends inland from the edges of the Great Lakes and the St. Lawrence River in central and southern Ontario. This forest region represents 20 percent of Ontario's actively managed Crown forest. The greatest concentrations of this forest type occur on the north and east shores of Lake Huron, in the Algonquin Park area, and in the Great Lakes-Boreal transitional zone that stretches from Thunder Bay to Fort Frances in northwestern Ontario.

Sugar maple, white pine, red pine, eastern white cedar, hemlock, tamarack, black spruce, white spruce, red oak, white oak, basswood, ash, poplar, yellow birch, and white birch are dominant species in this zone. Parts of this forest region have thin soils

Figure 2d Typical jack pine forest found within the Boreal Forest.

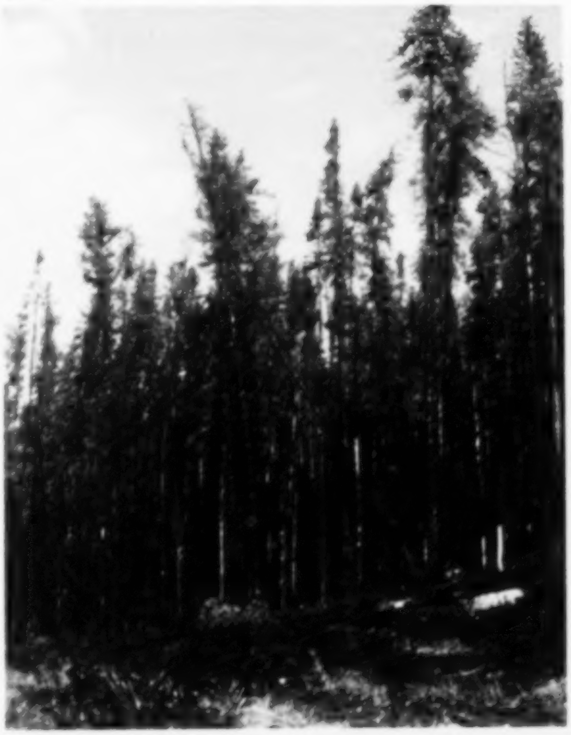
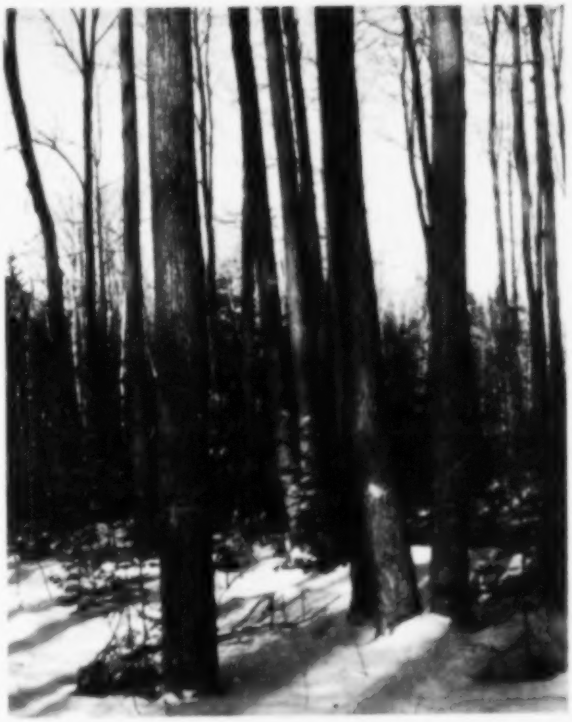


Figure 2e Typical maple forest found in the Great Lakes-St. Lawrence Forest.



over granite bedrock, while deep, well-drained soils are found elsewhere. The great diversity of sites and habitat in this region supports many wildlife species. Figure 2e illustrates a typical maple forest found in the Great Lakes-St. Lawrence Forest.

The Deciduous Forest is located in the southernmost part of Ontario, and is the only occurrence of this type of forest in Canada. Situated primarily in smaller pockets of forest on private land and within provincial parks on the north shore of Lake Erie, the Deciduous or Carolinian Forest region exists in the most densely populated area of Ontario. This region is now home to more than 25 percent of Canada's population, even though it covers less than one percent of the country's land mass. The region is over 3 million hectares in size, but less than 15 percent is forest. More than 75 percent of this region is agricultural land, while most of the remainder is urban. Forests in this region are now mostly found in locations with low agricultural potential, such as sand plains and bottomlands. These forest fragments have usually been greatly modified by human activities.

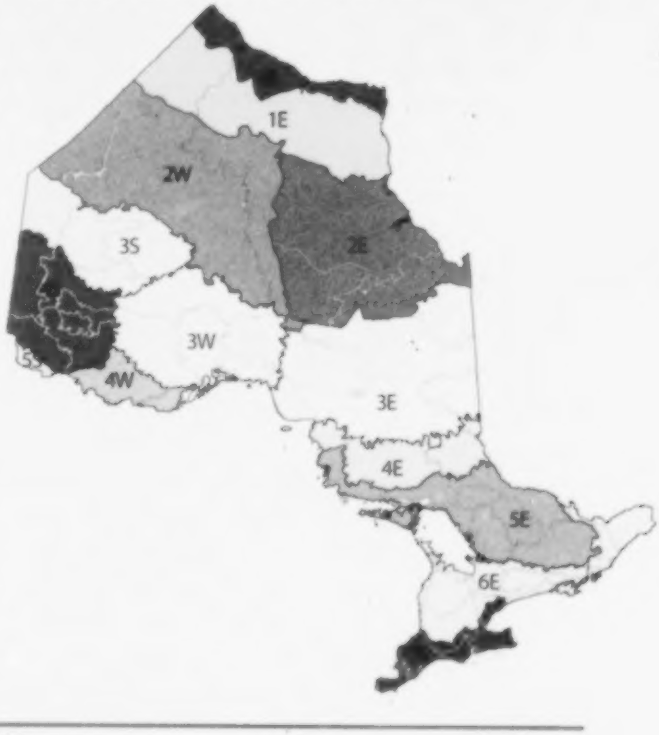
Surface deposits ranging from gravel to clay cover the limestone bedrock that underlies the Deciduous Forest region. Maple, sassafras, walnut, and several varieties of oaks grow here. The Deciduous Forest region generally has the greatest diversity of tree species, while possessing the lowest proportion of forest in Ontario. With its rich forests and warm climate, several unique wildlife species, such as opossum and red-bellied woodpecker, are present. Good examples of Deciduous Forest exist on Lake Erie's northern shore, in parks such as Wheatley, Rondeau, and Turkey Point. Figure 2f shows a multi-species hardwood forest typical of the Deciduous Forest region.

Ecological Land Classification System

The ELC system is a hierarchical and consistent framework for classifying landscape and site-level ecosystems formed by combinations of geologic, climatic, vegetative, soil, and landform features. At the broadest scales the ELC system is guided by a set of 14 ecoregions. Each ecoregion is further subdivided, resulting in a total of 71 ecodistricts across Ontario. A map illustrating the ecological regions of Ontario is shown in Figure 2g. For further details about the use and development of the ELC, see Chapter 10.

Figure 2f Multi-species hardwood forest typical of the Deciduous Forest region.

Figure 2g Ecological regions of Ontario.



Administrative Subdivisions

Management Zones

Ontario, comprised of 107.6 million hectares of land and water, is divided into three forest management zones (Figure 2h). The Northern Boreal Forest (41.9 percent of Ontario) describes the large expanse of Boreal Forest and Hudson Bay Lowlands. The Planning Area (42.1 percent of Ontario) refers to the middle zone where forest management planning and associated operations are currently carried out on Crown lands. Southern Ontario (7.7 percent of Ontario) is an area of mostly private land, where the majority of the population of Ontario lives. The Great Lakes make up the remaining 8.9 million hectares, or 8.3% of Ontario.

Productive forest on Crown land in the Planning Area covers about 33.7 million hectares, or 31.3% of Ontario. Within this area the forest area managed for harvest is limited to 21.8 million hectares, or 20.3 percent of Ontario (Figure 2i).

Figure 2h Forest management zones in Ontario.

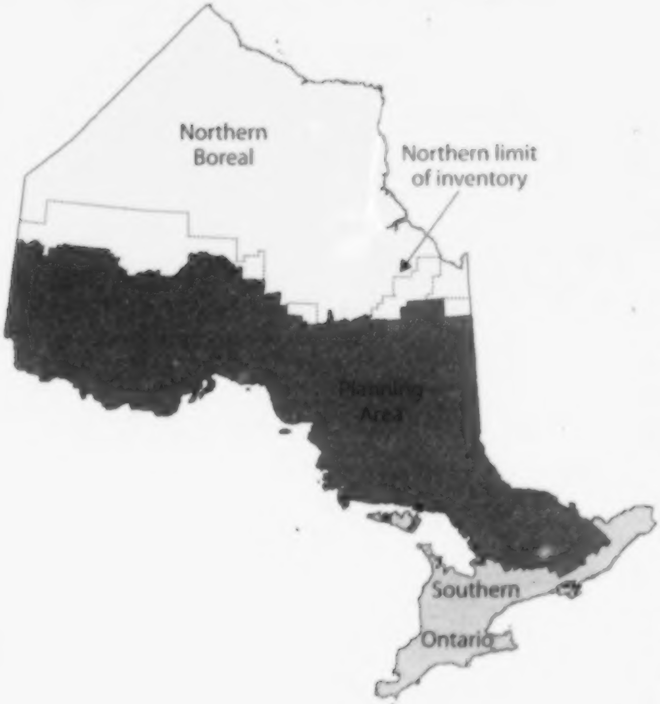
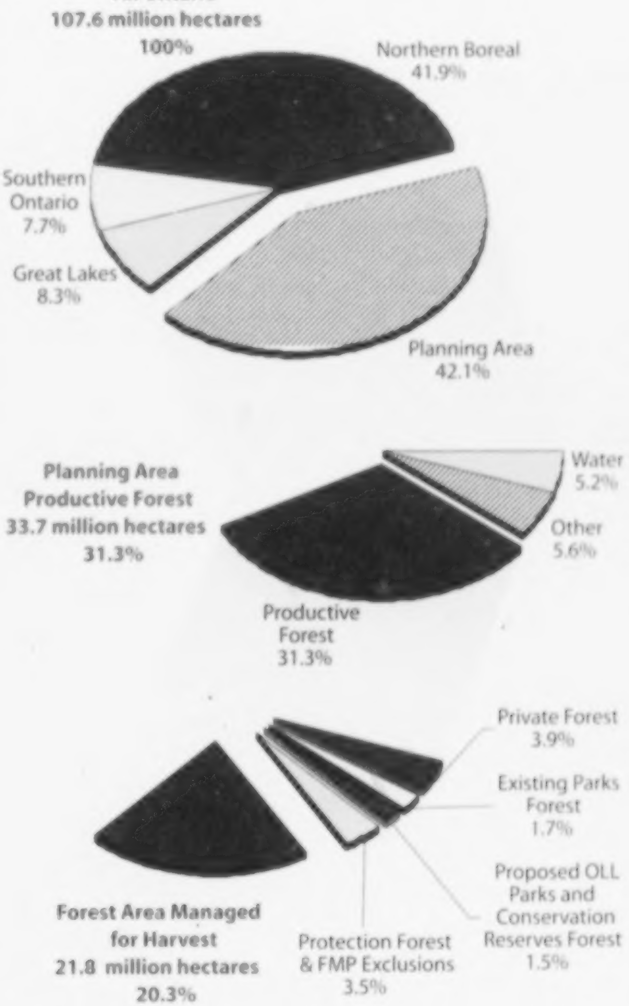


Figure 2i Extent of the Planning Area.



The Planning Area referenced in this document is essentially the same as that area identified in *Ontario's Living Legacy - Land Use Strategy*. The context for this area was defined during the Ontario's Living Legacy (OLL) process, essentially starting with the Area of the Undertaking from the Timber Class EA approval, and adding the six large parks (totalling 2.1 million hectares) bordering this area - Woodland Caribou, Wabakimi, Quetico, and Lake Superior Provincial Parks, Pukaskwa National Park, and Michipicoten Island. Since the OLL process there has been a slight revision to this Planning Area,

[illegible]

[illegible]

[illegible]

[illegible]

0E
1E
2W
2E
4S
3W
4W
4E
5E
6E
7E

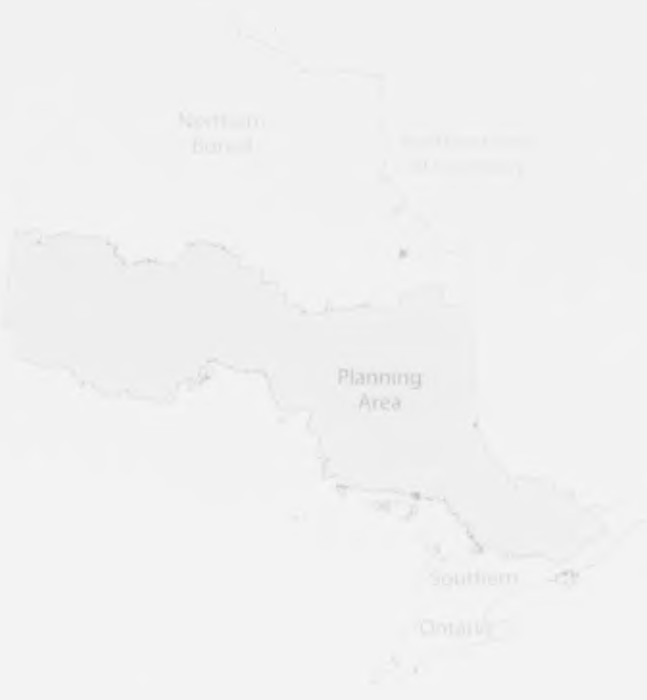
[illegible]

Administrative Subdivisions

Management Zones

[illegible]

[illegible]


Northern
Boreal
Planning
Area
Southern
Ontario

[illegible]

which now includes the remaining 135,000 hectares of Wabakimi Provincial Park.

The process of regulating the proposed parks and conservation reserves in the OLL project will occur over the next few years. Part of this process involves resizing individual parks, as boundaries are refined and negotiated. Small increases and decreases occur as part of this regulation process, while still maintaining the end objective of having 12 percent or more of the Planning Area designated as parks and protected areas.

Administrative Regions and Districts

MNR administrative boundaries are shown in Figure 2j. For administrative purposes, the province is divided by the MNR into three regions, each with a regional office - Northwest Region (Thunder Bay), Northeast Region (Timmins/South Porcupine), and Southcentral Region (Peterborough). These three regions are subdivided into a total of 26 MNR administrative districts, each with a designated local office. For the purpose of carrying out forest management activities, MNR districts are further divided into individual forest management units.

Management Units

MNR Regional Directors approve Forest Management Plans developed for management units, based on direction in the *Forest Management Planning Manual for Ontario's Crown Forests*. For a more complete explanation, see Chapter 3. A map of the management units in effect as of April 1, 2001 is provided in Appendix 1.

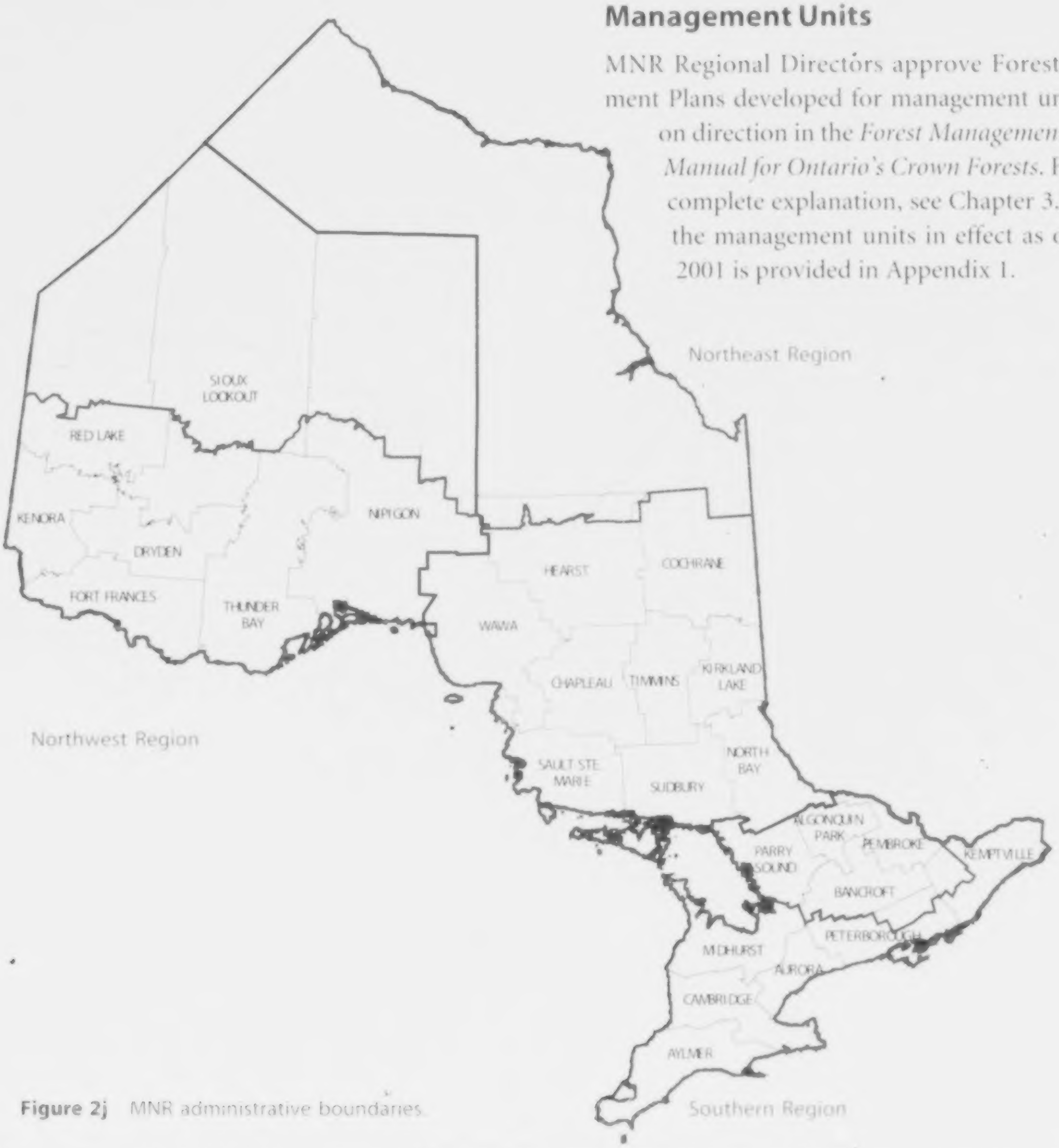

Northeast Region
SIOUX LOOKOUT
RED LAKE
KENORA
NIPIGON
DRYDEN
FORT FRANCES
THUNDER BAY
HEARST
COCHRANE
WAWA
CHAPLEAU
TIMMINS
KIRKLAND LAKE
Northwest Region
NORTH BAY
SAULT STE. MARIE
SUDBURY
ALGONQUIN PARK
PEMBROKE
KEMPTVILLE
PARRY SOUND
BANCROFT
PETERBOROUGH
MIDHURST
AURORA
CAMBRIDGE
AYLMER
Southern Region

Figure 2j MNR administrative boundaries.

Ontario's Forest Inventory

For this annual report, the area of the province has been summarized using both Ontario Land Cover data and Forest Resources Inventory (FRI) data. These summaries are shown in Appendix 2, using a common set of land classes for the province as a whole, and two sub-categories of the entire province - the Planning Area and the inventoried area.

Ontario Land Cover Database

The Ontario Land Cover Database is the first land cover classification in Canada to be completed for an entire province wholly from satellite remote sensing data. The Ontario Land Cover data was derived from digital, multispectral LANDSAT Thematic Mapper data recorded on a range of dates between 1986 and 1997. The majority of the satellite data frames were recorded in the early 1990s. The forest cutovers and burns were updated from 1996 Thematic Mapper coverage for the Great Lakes-St. Lawrence Forest region and most of the Boreal Forest region. The total provincial area summarized using this coverage is shown in Appendix 2.

Forest Resources Inventory (FRI)

Using aerial photographs and field verification, the FRI is created by classifying forest stands and other areas into broad physical categories including productive forest, non-productive forest, non-forested land, and bodies of water.

Each component is further classified by its ownership and land use. The FRI provides descriptive information in the form of interpreted aerial photographs, forest stand maps, and computerized data, used for management planning and to monitor the health of the forest.

A new inventory must be conducted on each management unit approximately every 25 years. Updates are required at the start of each new Forest Management Plan to reflect all changes to the forest (i.e., depletions and accruals) that occurred prior to the commencement of the new plan. Depletions include harvest and natural reductions, such as those caused by wildfire, insects, disease, and severe weather events. Accruals include the results of forest renewal and tending activities for both assisted and naturally regenerated areas.

FRI updates occur only within the Planning Area for use in Forest Management Plans. The average age of the FRI within the Planning Area is approximately seven years. Inventories of southern Ontario and the extreme north are more than 20 years old. A vast area of the extreme north is not inventoried. For comparison purposes, FRI summaries for both the Planning Area and the inventoried area are included in Appendix 2.

STATE OF THE FOREST REPORT, 2001

The MNR's mission is "to manage our natural resources", and in this case specifically those that are forest based, "in an ecologically sustainable way to ensure they are available for the enjoyment and use of future generations". In support of this, Ontario now reports comprehensively on the status of Ontario's forest resources every five years. Ontario's first *State of the Forest Report, 2001* supplies detailed information on Ontario's forests for the five-year period 1995/96 to 1999/2000.

This 340 page report includes an overview of Ontario's forests regions, its managed forests, and Ontario's industrial wood supply. The legal and policy requirements for state of the forest reporting in Ontario are described. The provincial, national and international context for state-of-the-forest reporting and the evaluation of forest sustainability, using criteria and indicators of sustainable forest management, is outlined.

The *State of the Forest Report, 2001* describes Ontario's forests and forest management, using criteria and indicators of sustainable forest management. Sixty-four Ontario-specific, environmental, social, and economic indicators are described and applied in an Ontario context, using the key forest values that residents want to sustain and enhance for their forests.

Parks and Protected Areas

Announced on March 29, 1999, OLL established 378 new parks and protected areas, covering 2.4 million hectares, bringing the total area of provincial parks and protected areas in Ontario to 9.5 million hectares. These parks were created to represent natural heritage features and to protect the integrity of the ecosystems they encompass. The regulation of the 378 parks and protected areas is a complex process, and each site requires additional local consultation to finalize the boundaries. As of May 31, 2002, 129 sites had been regulated.

Private Woodlands

Ontario has 5.6 million hectares of productive forest under private ownership, 14 percent of the province's inventoried productive forest landbase. Approximately 95 percent (1.9 million hectares) of the productive forest south of the Planning Area is privately owned, while 11.1 percent (3.7 million hectares) of the productive forest in the Planning Area is privately owned. Private forests account for 13.5 percent of Ontario's growing stock, including almost one-half of the gross total volume of hard maple and "other hardwoods".

In 2002, annual returns from forest resource processing facilities indicate that 9% of the gross total coniferous volume and 28% of the gross total deciduous volume processed in Ontario originates from private land. This equals 15% of the total volume processed. However, this does not fully recognize the contribution of Ontario's private land to provincial wood supply. Smaller facilities (processing less that 1,000 m3/year) are not required to be licensed and do not file annual returns. Wood that leaves the province and wood that is not processed at a facility (e.g., fuelwood) is also not accounted for. The total contribution of private land could be closer to 17%. Table 2a summarizes wood volume originating from private land in Ontario that is processed at licensed facilities.

Table 2a Wood volume from private land processed at licenced facilities

Reporting Category		2001	2002
Hardwood	Volume (m^3)	6,364,275	8,903,300
	Volume (%)	24%	28%
Softwood	Volume (m^3)	16,301,843	19,371,448
	Volume (%)	8%	9%
Combined Hardwood & Softwood	Volume (m^3)	22,666,118	28,274,749
	Volume (%)	13%	15%
Estimated Total from Private Land[1]	**Volume (%)**	**15%**	**17%**

[1] *Estimate includes a 2% increment to reflect smaller facilities, wood that leaves the province and wood that is not processed at a facility (e.g., Fuelwood).*

Source: Facility Annual Returns (not verified); volume of whole tree chips (tonnes) converted to cubic metres (m^3) with a 1.1 conversion; volume received from other facilities not included elsewhere.

Private Woodlands Framework

The ultimate decision of how private land in Ontario will be managed is made by the landowner. The MNR's private woodland initiatives encourage landowners to move towards the standard set by the definition of "good forestry practices" in the *Forestry Act*:

> "...the proper implementation of harvest, renewal and maintenance activities known to be appropriate for the forest and environmental conditions under which they are being applied and that minimize detriments to forest values including significant ecosystems, important fish and wildlife habitat, soil and water quality and quantity, forest productivity and health and the aesthetics and recreational opportunities of the landscape..."

The Private Woodlands Strategy (1991) outlines how the MNR will encourage stewardship of this resource and provide a framework for sustainability by:

- co-ordinating the programs and efforts of the many agencies and groups interested in promoting stewardship;
- providing education and skill training opportunities for landowners to become more knowledgeable about stewardship;

- providing effective policies as incentive to foster stewardship of woodlands; and,
- providing legislative support.

The framework consists of both legislative and incentive components.

The Legislative Framework

At the provincial level, the legislative component includes:

- the *Planning Act* and the Provincial Policy Statement
- municipal tree bylaws passed under the *Municipal Act*
- other legislation targeted to protect landscape features and promote good forest management

The provisions of the *Planning Act* and *Municipal Act* provide a basis for municipalities to protect woodlands and their associated values. However, they are discretionary and not mandatory in nature.

Significant Woodlands in the Provincial Policy Statement The Provincial Policy Statement (1997), which includes provisions for significant woodlands, is issued under the authority of Section 3 of the *Planning Act*, which requires that in exercising any authority that affects planning matters, planning authorities "shall have regard to" policy statements issued under the *Act*. The Provincial Policy Statement indicates that development and site alteration may be permitted in significant woodlands south and east of the Canadian Shield, if it has been demonstrated there will be no negative impact on the natural features or ecological functions for which the area is identified. The MNR may provide expertise and technical support to municipalities in efforts to determine the significance of woodlands in their planning and development decision-making. Technical expertise is also provided to the Ministry of Municipal Affairs and Housing for its roles under the *Planning Act*.

Tree Bylaws Ontario municipalities have traditionally had the authority to regulate the harvest of trees on private land through various statutes. Counties, regional municipalities and a few specific townships in southern Ontario were first able to pass tree bylaws through the *Trees Conservation Act* in 1946, then the *Trees Act* in 1950, and finally the *Forestry Act* (1998 amendments). Under the *Municipal Act* in 1994, all local municipalities with a population of greater than 10,000 could regulate tree cutting. Due to the population limit, bylaw provisions were not accessible to all municipalities.

To simplify the process and authority for tree bylaws, provisions were consolidated into the new *Municipal Act (2001)* which took effect on January 1, 2003. Upper-tier municipalities (counties and regional municipalities), lower tier municipalities (townships) and single tier municipalities now have equal access to tree bylaw powers. Provisions for tree bylaws have been removed from the *Forestry Act*, however, by-laws enacted under the *Forestry Act* remain valid until they are repealed. The *Municipal Act* provides enhancements, such as the option to charge violations per tree, require permits to cut and impose conditions on the cutting, allow by-law officers to order cutting to stop, as well as providing increased fines of $10,000 or $1,000 per tree. Some municipalities now use tickets for minor violations, simplifying the enforcement of tree bylaws. Table 2b lists the number of tree-cutting bylaws in Ontario by year, and the act under which they were prepared. To learn more about tree bylaws, visit http://www.ontariowoodlot.com.

Table 2b Number of municipalities with tree cutting bylaws in Ontario

MNR Region	Legislation	2000	2001	2002
Southern	Forestry Act	23	24	24
	Municipal Act	15	16	16
Number of tree cutting by laws in Ontario		**38**	**40**	**40**

Targeted Legislation The provincial interest in privately owned forests is also expressed for the Niagara Escarpment and Oak Ridges Moraine. Through enabling legislation, enhanced protection is provided under the *Niagara Escarpment Planning and Development Act* and the *Oak Ridges Conservation Act* and associated plans.

The MNR promotes natural area protection through conservation easements under the *Conservation Land Act*. Easements may be entered into with a qualified organization and landowners can provide limits on land use. Since the easement is registered on title, it binds all owners of the land over the easement's term. The land may be devalued in dollar terms by the easement, which can lower property taxes.

Ontario's regulatory framework includes the *Professional Foresters Act*. The principal objective of this *Act* is to regulate the practice of professional forestry and to govern its members in accordance with the *Act*. While the *Professional Foresters Act* does not restrict a landowner's ability to cut trees on their property, it does affect practitioners of forestry whom they may hire for assistance.

The Incentive Framework

To achieve healthy ecosystems, incentives are offered to promote the level of stewardship inside the legislative framework. At the provincial level, the incentive framework includes: the Managed Forest Tax Incentive Program (MFTIP) and Ontario Stewardship. Other programs and opportunities complement this framework and are accessible through conservation authorities, environmentally based non-government associations and municipalities.

Managed Forest Tax Incentive Program The MFTIP was introduced for the 1998 tax year to bring greater fairness to the property tax system by valuing forest land according to its current use. The program is designed to increase landowner awareness about forest stewardship. Participants in the program range from Essex County landowners looking after a fragmented natural landscape, to owners of shoreland in Muskoka, to large forest companies in northern Ontario contributing to the northern economy.

Landowners who apply and qualify for the program have their property classified under the Managed Forest property class described in Ontario Regulation 282/98 of the Assessment Act. The eligible property is then taxed at 25 per cent of the residential tax rate established by the municipality. The minimum property size for the program is 4 hectares (9.88 acres). Landowners participating in the program are required to prepare a Managed Forest Plan for their property and have it approved by an individual designated by MNR as a Managed Forest Plan Approver.

The total area covered by approved Managed Forest Plans indicates the program's success and, to some degree, the amount of private forest being managed sustainably. The goal is to ensure there is no long-term decline in the forest area included in the program. In 2002, there were 9,889 properties and 708,857 hectares of land receiving benefits under the MFTIP (Table 2c). In comparison to 2001, this is a 6.5% increase in properties participating and a 16% increase in participating area. Much of the growth in area was found in the Northeast Region, with participation increasing by almost 85,000 hectares or 163%, but with a net increase of only 70 properties. Much of the growth in the number of properties occurred in the Southern Region, with more than 500 properties entering the MFTIP, covering more than 20,000 hectares. This data reflects the difference in forest parcel size between northern and southern Ontario.

Ontario Stewardship Ontario Stewardship was initiated in 1995 by the MNR to encourage greater landowner involvement in stewardship activities. Ontario Stewardship helps people find information, expertise, and funding to ensure good management

Table 2c Private forests managed under the Managed Forest Tax Incentive Program, by MNR region

	Forest Area Under Management (hectares)			Number of Properties		
MNR Region	2000	2001	2002	2000	2001	2002
Northeast Region	59,197	52,210	137,063	887	865	935
Northwest Region	181,019	180,206	180,430	105	115	118
Southern Region	385,967	379,157	391,364	8,364	8,309	8,846
Total	**626,183**	**611,575**	**708,857**	**9,356**	**9,289**	**9,899**

Reporting date - July 31st of the year specified occurs on private land. The program's strength lies in its stewardship councils, which are volunteer groups of landowners and land interest agencies. Each stewardship council works with a MNR stewardship co-ordinator. Many stewardship councils have representatives from forest interests and the forest industry. Each council is reflective of the landscape it serves.

The MNR provides funding to each council to be invested in community level projects. This is often combined with funds from other groups, government ministries and foundations. Volunteer hours are tracked and reported to show the total amount invested in private land stewardship. Examples of projects include workshops on woodlot and wetland management, stream restoration projects, endangered species conservation and community tree planting. For information on Ontario Stewardship, visit their website at: http://www.ontariostewardship.org.

The MNR maintains a central Stewardship Opportunity Fund that councils, in partnership with local or provincially-based groups, can access for assistance with activities that have impact at the landscape level. In 2002/03 the Stewardship Opportunity Fund contributed $25,000 towards the research and writing of the Agroforestry Best Management Practices Manual as part of the Best Management Practices series. This is a partnership with the Ontario Ministry of Agriculture and Food and various farm organizations, and at completion will be a $180,000 project. The manual will highlight practices to incorporate trees, shrubs and small woodlots in farming systems, contributing to a sustainable management system for land.

Table 2d reflects the value and contribution that Ontario Stewardship makes to natural resources in Ontario. Some projects are difficult to designate as forestry or fish and wildlife, and many include economic development and education components.

Other Private Woodland Initiatives The MNR supports other initiatives that provide assistance to Ontario's private woodland owners:

- The Extension Note series provides information in an easy-to-understand format on topics related to land, water, wildlife, trees and property management. The notes are on the Ontario Forests website (http:/ontariosforests.mnr.gov.on.ca). Other publications, of a more technical nature, are also available to landowners.
- Through the Eastern Habitat Joint Venture Program, the MNR and partners actively conserve important wetland and upland habitats for the benefit of waterfowl, other wildlife and the public. Through this program, non-government partners offer technical and financial assistance to landowners for conservation projects.

ONTARIO STEWARDSHIP COUNCIL FOCUS: THE NORFOLK LAND STEWARDSHIP COUNCIL

The Norfolk Land Stewardship Council is composed of people who have an interest in conservation and land care. They represent landowners and land interests in Norfolk County and volunteer their time out of concern for local land stewardship issues.

In 1995 the Norfolk Land Stewardship Council partnered with the Norfolk Federation of Agriculture to form the Norfolk Woodlot Owners Association (NWOA). NWOA hosts events and seminars to educate their members on good forestry practices. NWOA strives to ensure that members receive value from their woodlots through workshops and their Forest Resource Manual that is distributed to all members.

The 300+ members in NWOA are treated to a monthly newsletter produced by the County's forest conservation department and access their own website at http://www. norfolkwoodlots.com. NWOA was also instrumental in the formation of the Southwestern Ontario Loggers Association District #1 which is helping to raise the standards of local logging operations. Informed landowners and better loggers will lead to better forests in Norfolk County. In recognition of this, in 2003 NWOA won the Foundation for Rural Living's Awards of Rural Excellence, Excellence in Community Leadership category.

The Norfolk Land Stewardship Council: "*People working together to advance stewardship on private land.*" For more information, visit http://www.ontariostewardship.org.

Table 2d Summary of Ontario Stewardship accomplishments for 2002/03

Reporting Criteria	Measure
Council summary	
Number of stewardship councils	39
Number of council members (12/council)	468
MNR contribution ($10,000/council)	$390,000
Opportunity fund ($)	$229,000
Project summary (primary program area)	
Number of fish and wildlife projects	182
Number of forestry projects	173
Number of "other" projects	66
Total number of projects	421
Partner contributions to	
Number of volunteers	11,126
Number of volunteer hours	150,783
In-kind partner effort ($)	$4,092,500
Direct partner contributions ($)	$23,042,200
Total partner contributions (direct/indirect $)	**$27,134,780**

- The Conservation Land Tax Incentive Program offers a reduction in property taxes to landowners agreeing to protect the natural heritage feature identified by the MNR on their property (e.g., provincially significant woodlands). For 2002, the program had over 15,000 properties participating, thereby conserving some of Ontario's most significant natural heritage features.

Chapter 3
Forest Management Planning

Ontario's advanced forest management planning system includes a comprehensive planning process, extensive public consultation and detailed plan content requirements.

The planning area for which a forest management plan (FMP) is prepared is called a management unit. Ontario continued to apply its' forest management planning system for each management unit during the 2002/03 report year.

Efforts to obtain extension of the Environmental Assessment Act approval, prepare a revised forest management planning manual, and implement the Forest Information Manual were also continued in 2002/03.

The rationalization and consolidation of management unit areas, to realize efficiencies in forest planning and plan implementation, has continued. As of April 1, 2002, the Area of the Undertaking was divided into 53 management units. One additional management unit (for a total of 54) is comprised of Crown land in southern Ontario outside the Area of the Undertaking. This is a reduction of 2 management units compared to the previous year (i.e. April 01, 2001). Further reductions in the number of management units are expected to occur annually for several more years.

Appendix 1 provides a map and the list of forest management units as of April 1, 2002. During 2002/03, management units ranged in size from 67,000 hectares to 1,864,000 hectares of managed Crown land, with an average unit size of 657,000 hectares.

There were 6 forest management plans approved for implementation in 2002, while work was initiated or continued on an additional 25 plans. Appendix 3 includes a listing of the 2002 plans, as well as the schedule of FMPs being prepared for implementation in 2003, 2004, and 2005. This appendix is included in accordance with the requirements of the Class EA approval.

The *Crown Forest Sustainability Act* includes specific requirements for forest management planning and associated public consultation. As well, forest management planning rules have also been established under the *Environmental Assessment Act*. These two sources continue to provide the principal basis for the *Forest Management Planning Manual* *for Ontario's Crown Forests* (FMPM) and the implementation of forest management planning processes.

The FMPM provides detailed requirements for the comprehensive planning process and the approach to extensive public consultation as well as plan content. The manual also contains requirements for plan implementation, monitoring, reporting and evaluation.

An approved forest management plan must be in effect before any forest operations are undertaken on a management unit. Each plan includes:

- a description of the forest, as well as a description of social and economic conditions related to the management unit;
- long-term strategic direction, including objectives and targets; an assessment of plan sustainability; the determination of areas eligible for operations during the 20-year period of the plan; and, the planning of primary access corridors for that time frame;
- areas of operations, including harvest, renewal and tending, and associated operational prescriptions for the first five-year term;
- prescriptions for the protection of values, such as fish and wildlife habitat, archaeological sites and tourism facilities, in or adjacent to areas of operations;
- primary and secondary access road corridors for the first five-year term;
- a description of the program to be used for monitoring forest management operations and assessing renewal success, and
- supplementary documentation and an FMP summary.

It normally takes about two and a half years to prepare a forest management plan. These plans normally remain in effect for a five-year term, and are normally scheduled for renewal at the end of each term.

The MNR monitors the implementation of each plan to ensure that operations are consistent with the approved plan. At the end of each year and following each five-year term, reports on plan implementation are prepared, including an assessment of forest sustainability.

Timber EA Renewal

The effective period of the approval for timber management activities under the *Environmental Assessment Act* covers nine years (1994 to 2003). Term and Condition #114 required the MNR to undertake a comprehensive review of the forest management activities covered by the Timber Class EA approval, and to submit a report containing its findings, including recommendations, for amending and extending the approval.

Under the Timber EA Renewal Project efforts to prepare the report, initiated in 2000/2001, culminated in the document "A Review by the Ministry of Natural Resources Regarding the Class Environmental Assessment for Timber Management on Crown Lands in Ontario" ("MNR's Timber Class EA Review") dated July 17, 2002. The efforts, initiated since the start of this project and resulting in this final document, included:

- an internet website;
- a public advisory committee (a subcommittee of the Provincial Forest Policy Committee);
- preparation and release for public comment of a discussion paper presenting some key concepts;
- information sessions held in Dryden, Thunder Bay, Sault Ste. Marie, Timmins, North Bay, Peterborough and Guelph, to obtain public comment on the discussion paper, and
- MNR staff meetings with various stakeholders (e.g., the forest industry, environmental groups and other government agencies).

The report was completed with particular focus on the progress of the implementation of the existing Timber Class EA approval and on MNR's recommendations for revised terms and conditions. The report was then submitted to the Ministry of the Environment (MOE). Draft conditions were prepared by MOE based on MNR's recommendations and in consideration of the views of stakeholders. MOE then conducted public consultation on the draft conditions in preparation for a final decision.

Forest Management Planning Manual Revision

Efforts on the FMPM Revision Project, initiated in June 2001, were temporarily reduced as preparation and submission of "MNR's Timber Class EA Review" took priority during the early part of the 2002/03 report year. Following the submission of the review, the writing team made progress building on the results of the previous year. Initial drafts of components to be included in the revised FMPM, particularly those directly related to the draft terms and conditions in "MNR's Timber Class EA Review", were prepared.

Forest Information Manual

Implementation of the *Forest Information Manual*, which came into effect in the previous report year, continued in 2002/03. This manual describes the requirements for exchanging information about the management of Crown forests between the forest industry and the MNR. The *Forest Information Manual* also sets out the direction for copyright and ownership of information prescribed by the manual, which is consistent with existing legislation concerning copyright, intellectual property and access to information. The *Forest Information Manual* maintains the MNR's ability to ensure that the public is provided with access to information about the management of Ontario's Crown forests.

Implementation of the *Forest Information Manual* has continued to be a considerable challenge, since both the forest industry and the MNR maintain and use different information systems and database structures, and organize their information and data in different ways. The exchange of information between the MNR and the forest industry has improved considerably since the regulation of the *Forest Information Manual.*

The MNR and the forest industry share the responsibility to manage and exchange information that supports sustainable management of our public forests. To meet that responsibility, significant effort has been expended on the development of a web-based system to more effectively and easily exchange digital information about forest management. The Forest Information Portal is a website application that provides a single access point to exchange forest information between the MNR and the forest industry in Ontario. The Forest Information Portal supports:

- provision of data and information from the MNR to the forest industry;
- forest industry submission of data and information to the MNR, and
- review and verification of forest-related data and information.

The Forest Information Portal was introduced for use in 2002, and supported the submission of information for the 2002/03 management unit annual reports from forest industry to the MNR. Much of the digital report information submitted to the MNR through the portal was used to create this report. Technical specifications, which identify common standards and consistent formats for the exchange of digital information, were also introduced in 2002 to support management unit annual report submissions through the portal.

The development of the Forest Information Portal is expected to continue over the next few years. Examples of other types of data and information that are expected to be exchanged through the portal in the future include: forest resources inventory; forest values; geographic base features; forest operations compliance inspection reports; harvest volumes; maps; and, other forest-management-related information.

Chapter 4
Forest Industry and Government Revenue

Ontario's Crown forests provide numerous opportunities and benefits, for recreation, tourism, hunting, trapping, fishing, and food production. For example, millions of Ontario residents reported participation in various forest-based leisure activities in 2002 (Table 4a).

Many Aboriginal communities in Ontario are situated in forested environments, and these communities often make extensive use of the forest. Opportunities for Aboriginal peoples to have more equal participation in the benefits of forest management are discussed in Chapter 9.

Ontario's forests also supply the basic resources for a variety of industries, including lumber, structural board, pulp, paper, and newsprint. In addition, facilities that support forest activities and numerous service industries also depend on Crown forests. While there are many users of the forests of Ontario, this chapter focuses on the forest industry, and the revenues provided by the forest industry to the government of Ontario.

Forest Products Industry

The logging, wood products manufacturing and paper manufacturing sectors, plus other related industries, comprise the forest products industry. The logging industry includes both large and small contractors, as well as large, mill-owned operations. The contractors may work independently or directly for company-owned mills.

The wood products manufacturing industries include businesses such as sawmills, veneer mills, and structural board and lumber plants producing both construction materials and specialty wood products. The capital investments in these facilities range from a few thousand dollars to over $250 million dollars.

Pulp and paper mills are the largest types of plants for converting timber fibre to forest products. A greenfield pulp mill can cost close to $1 billion. Their output represents almost 60 percent of the value of all forest product shipments.

The value of sales from Ontario's forest products sector fell from $18.7 billion in 2001 to $18.4 billion in 2002. Table 4b shows the value of

Table 4a Persons participating in forest-based leisure activity in Ontario

	Persons Participating in Ontario				
Leisure Activity	**1998**	**1999**	**2000**	**2001**	**2002**
Bird Watching	1,120,000	1,049,000	1,019,000	977,000	1,003,000
Canoeing	1,236,000	1,210,000	1,257,000	1,154,000	1,220,000
Cross-Country Skiing	749,000	626,000	609,000	477,000	505,000
Fishing	1,814,000	1,699,000	1,632,000	1,498,000	1,650,000
Hunting	493,000	502,000	479,000	417,000	459,000
Mountain Biking	n/a	n/a	n/a	667,000	679,000
Snowmobiling	554,000	583,000	620,000	450,000	470,000
Walking/Hiking	4,299,000	4,320,000	4,406,000	3,962,000	4,143,000

Source: Print Measurement Bureau 1998-2002 Readership Surveys

sales (shipments) in this sector for the five-year period ending in 2002.

Value added, the amount the industry actually contributes to the Ontario gross provincial product (this eliminates the double counting effect of sales between the forest product manufacturers and their suppliers), rose to $8.1 billion, an increase of 20.1 percent from the year before. Table 4c shows the value added for the logging industry and both major forest sector industries - the wood product industries, and the paper and allied industries.

Table 4b Ontario forest products sector sales

Year	Value of Shipments (million $)
1997	$14,728
1998	$15,226
1999	$15,849
2000	$18,709[1]
2001	$18,402

[1] The logging component for 2000 and 2001 total was not available, and was estimated using 1999 values

Source: Statistics Canada 2001

Employment within the forest industry in 2001 was 320,000[1]. Included in this figure are direct, indirect, and induced jobs. Table 4c shows direct employment only.[2]

As well as being a major employer, the forest industry annually invests in capital improvements and mill expansions. In 2001, the forest industry had capital and repair expenditures of $1.3 billion. In 2002 these expenditures fell to $1.13 billion.

Table 4c Distribution of manufacturing activities by sector and direct employment within each sector, 2001

	Number of Establishments		Number of Employees		Total Value Added	
Sector	Number	% of Canadian Total	Number	% of Canadian Total	Value Added (million $)	% of Canadian Total
Logging[1]	1,657	17%	6,000	11%	$559	12%
Wood Product Manufacturing	912	24%	33,000	20%	$2,435	20%
Paper Manufacturing	385	45%	41,000	37%	$5,228	32%
Total	**2,954**	**21%**	**80,000**	**24%**	**$8,222**	**25%**

Number of establishments and Value Added - Annual Survey of Manufacturers
Number of employees - Labour Force Survey
[1] 2001 Logging information is based on 1999 values

Source: Statistics Canada 2001

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[1] Statistics Canada and MNR's Socio-Economic Impact Model

[2] Statistics Canada Labour Force Survey is using a new Standard Industrial Classification system, which renders direct comparisons with previous years inappropriate.

Forest Sector Employment

Based on the 2001 Statistics Canada census, 28 Ontario communities, most located in Northern Ontario, had at least 20 percent of their labour force employed in the forest industry. Appendix 4 lists these Ontario communities, shows the total labour force for each community, and identifies the percentage that worked in the forest sector.

Harvest Licence System

The vast majority of Ontario's forests are harvested by companies or individual operators that hold one of two types of licences - Sustainable Forest Licences (SFLs) and Forest Resource Licences (FRLs). The total number of both licence types is shown in Table 4d. Many FRLs and salvage licences are issued on existing SFLs, and are listed in the overlapping licence column.

Table 4d Number of licences issued in 2002/03, by licence type

Licence Type	Number of Licences Overlapping	Not Overlapping	Total
Sustainable Forest Licence	0	50	50
FRL < 300 hectares	2,909	104	3,013
FRL > 300 hectares	198	234	432
FRL Salvage	2	72	74
Total	**3,109**	**460**	**3,569**

Among other requirements, a SFL requires the licensee to prepare forest management plans following the direction of the *Forest Management Planning Manual for Ontario's Crown Forests*. The licensee is responsible for implementing forest management plans by carrying out access, harvest, renewal, and maintenance activities. The SFL holder must follow the rules and guidelines set by the MNR to ensure sustainable forest management. FRL holders follow forest management plans approved by the MNR and must operate to ensure the long-term health of the forest. For further details on Ontario's forest management planning system, see Chapter 3.

Resource Stewardship Agreements

Resource Stewardship Agreements (RSAs) are a means for SFLs and licensed tourism establishments, two key forest users, to collaborate on the development of planning solutions proposed during the forest management planning process. The *Tourism and Forestry Industry Memorandum of Understanding* (2001) provides direction for the development of these RSAs. The Memorandum of Understanding recognizes the value of two industries working co-operatively to understand each other's needs and of working together in the development of planning proposals. While this co-operative approach to planning has been used in some parts of Ontario for the past 10 or more years, the Memorandum of Understanding commits the industries and government to support use of the process everywhere in the Crown forest. Use of the RSA process is intended to provide greater security for the two industries and help them avoid costly and time-consuming forest management conflicts.

Issues commonly addressed in RSAs include access road use controls, viewscape protection and timing restrictions on forest operations. In 2003 the first 8 RSAs were signed, and another 8 are under development. A further 22 tourist operators have expressed interest to SFL holders, declaring that they have an interest in this process.

Ontario's Stumpage System

In 2002/03, the Government of Ontario received direct payments from the forest industry in the form of stumpage fees, and indirect revenue from taxes.

Forest companies pay a stumpage fee to the Crown for every cubic metre of timber harvested. A market-based pricing system is used by the MNR to calculate the stumpage fees companies and individuals pay for harvesting timber from Crown land. In times of strong market prices for forest products, the stumpage system triggers higher fees. In poor markets, harvesters pay lower fees.

The Crown's stumpage fees have four components:

- A minimum charge per cubic metre of harvested timber, regardless of the species, goes to the Consolidated Revenue Fund of the province. This charge is adjusted annually. Table 4e shows the changes in the minimum charge since 1998.
- A forest renewal levy to provide dedicated funding for forest renewal. This charge varies depending upon the tree species and its anticipated renewal cost. Forest renewal charges are held in either a Forest Renewal Trust Fund or a Forest Renewal Special Purpose Account, and can only be used for regenerating and maintaining the health of Ontario's forests.
- A residual value charge, paid to the province's consolidated revenues by forest companies or individuals licensed to harvest timber. The calculation of this charge varies from zero in times of low forest product prices to about $20 per cubic metre when product prices are high.

Table 4e Minimum stumpage charge per cubic metre

Fiscal Year	Minimum Charge
1998/99	$2.85
1999/00	$3.23
2000/01	$3.28
2001/02	$3.40
2002/03	$3.44

- *A Forestry Futures Trust charge is also applied;* this charge is a $0.48 per cubic metre of timber harvested. The Forestry Futures Trust is managed by an independent Crown committee. It funds projects that meet MNR-approved criteria. To qualify, projects must be: a silvicultural activity on Crown land that addresses renewal of trees killed or damaged by fire; renewal of land where a licensee becomes insolvent; forest protection from insect or disease infestation; intensive stand management related to a critical wood supply; or, expenditures for Independent Forest Audits, Forest Resource Inventories, or conversion charges[3].

Table 4f shows the direct payments from the forest industry to the various government accounts during the last five fiscal years. The Forest Renewal Special Purpose Account will be phased out when all Crown management units, currently under direct management by the MNR, are converted to SFLs.

Table 4f Crown charge payments by the forest industry

Year	Forestry Futures Trust	Consolidated Revenue Fund	Forest Renewal Trust	Forest Renewal SPA[6]	Total Payments
1998/99	$20,605,300[1]	$157,452,300	$71,298,900	$28,930,800	**$278,287,300**
1999/00	$10,050,700[2]	$155,695,700	$78,668,100	$5,147,900	**$249,562,400**
2000/01	$11,180,600[3]	$105,191,500	$83,893,900	$2,306,800	**$202,572,800**
2001/02	$11,087,400[4]	$90,159,925	$67,363 300	$2,613,700	**$171,224,325**
2002/03	$11,880,265[5]	$90,579,662	$88,951,235	$3,111,670	**$194,522,832**

[1] Includes conversion funds of $8,418,167 collected in 1998/99
[2] Includes conversion funds of $1,640,892 collected in 1999/00
[3] Conversion funds were not collected in 2000/01
[4] Includes conversion funds of $100,349
[5] Includes conversion funds of $50,044
[6] Amounts are as of March 31, 2002

Note: Funds in the Forest Renewal Trust, the Forest Renewal Special Purpose Account, and the Forestry Futures Trust are not formally counted as revenue by the province, although funds in the Forest Renewal Special Purpose Account are held in the province's Consolidated Revenue Fund.

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[3] Conversion charges are used to assist new, smaller SFLs with costs associated with the establishment of an SFL (e.g., inventory).

Chapter 5
Forest Access Roads

Most forest access roads on Crown land are planned, constructed, and paid for by the forest industry. The Forest Management Plan for each management unit describes the location, construction, maintenance, and management of access roads that exist, or are planned for construction. These roads are essential for performing forest management activities. They also provide public access to provincial Crown land for tourism, outdoor recreation, mining, and other activities.

This chapter provides information on the construction of primary and secondary forest access roads. It describes road maintenance activities, including grading, snow plowing, re-alignments, flood repairs, bridge repairs, and any other activity necessary to maintain existing roads. This chapter also reports on controlling access to roads, implementation of abandonment measures, and funding.

Road Construction and Maintenance

Figure 5a illustrates provincial road construction from 1998/99 through 2002/03 for primary and secondary forest access roads, and for each MNR region for 2002/03. Total primary and secondary road construction for 2002/03 amounted to 566 kilometres, an 18 percent decrease from the 2001/02 construction total of 687 kilometres. There were 118 kilometres of primary roads constructed in the province and 448 kilometres of secondary roads in 2002/03. About 63 percent of the forest access road construction occurred in Northeast Region, 36 percent occurred in the Northwest Region and less than 1 percent occurred in Southern Region in 2002/03.

Figure 5b illustrates total provincial road maintenance from 1998/99 through 2002/03 for primary and secondary forest access roads, and for each MNR region for 2002/03. Total road maintenance for the year was carried out on 18,208 kilometres of primary and secondary roads. This is about a 5 percent decrease over the 2001/02 total of 19,044 kilometres of road maintenance. Approximately 49 percent of the road maintenance in 2002/03 occurred in the Northeast Region, with 46 percent in Northwest Region and

Figure 5a Road construction by road class and MNR region

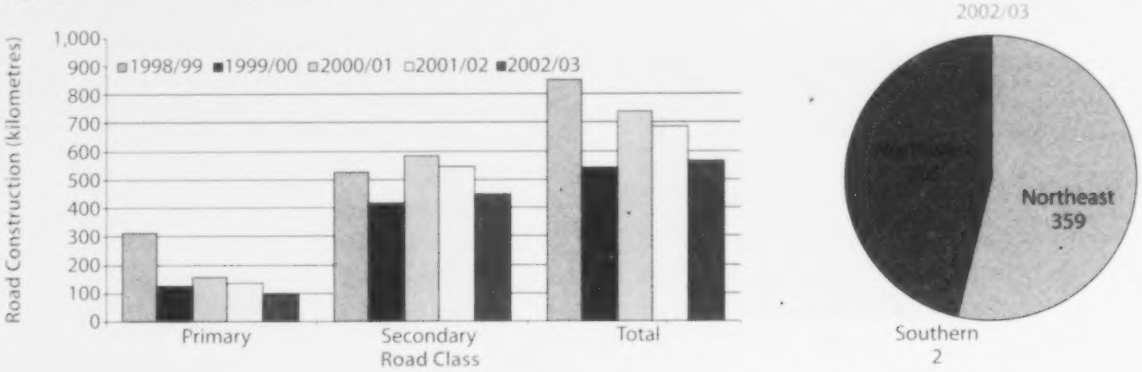
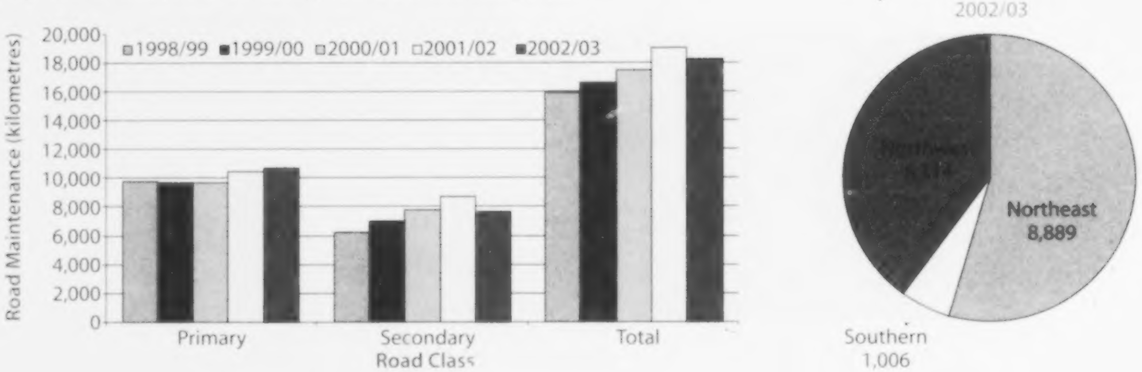


Figure 5b Road maintenance by road class and MNR region.



approximately 5 percent carried out in Southern Region.

In 2002/03 the Forest Access Road Program, funded by the MNR and the Ministry of Northern Development and Mines, invested $4.35 million in the reconstruction and maintenance of forest access roads in Ontario. Most of the road work funded by the two ministries serves several purposes, including public access and forest management.

ROAD CLASSES

PRIMARY ROADS are essentially permanent roads. They are regularly maintained with a life expectancy in excess of 15 years.

SECONDARY ROADS are essentially branches off primary roads. They are not considered permanent and are not normally maintained beyond their five to fifteen year period of use.

TERTIARY ROADS are built for short-term use (i.e., up to five years). They are not normally maintained beyond their period of use.

Road Access Control and Abandonment

Road access control and abandonment must be planned in advance of construction, and documented in the Forest Management Plan for each management unit. These activities must also be reported in the management unit annual report.

For reasons of public safety and/or resource management, forest access roads may be closed to certain uses on a temporary, seasonal, or permanent basis. Methods used to control access can generally be classified into two categories: erecting signs to advise the public of the restriction (referred to as signage); or, installing gates or using other physical means such as ditching (referred to as gated or physical barrier).

Figure 5c illustrates the length of primary and secondary forest roads that had controlled access from1998/99 through 2002/03. In 2002/03 a total of 3,342 kilometres of road had access controls, which is the first time over the previous four years that controlled access has decreased. There were 1,265 kilometres of controlled access roads in the Northwest Region, 1,424 kilometres in the Northeast Region and 653 kilometres in the Southern Region. Provincially, access was restricted on 960 kilometres of road by gating and on 1,254 kilometres of road by signage. Another 1,127 kilometres of road had access control through unspecified means, and are shown in the "other" category in Figure 5c.

Figure 5d illustrates the total length of primary and secondary forest access roads that were abandoned from 1998/99 through 2002/03. Approximately 416 kilometres of road were abandoned in 2002/03, a significant decrease from the previous year. This total included 159 kilometres in the Northwest Region and 257 kilometres in the Northeast Region. There was no reported physical road abandonment in the Southern Region in 2002/03. However, many roads in this region are abandoned naturally.

Figure 5c Road access control by control method and MNR region.

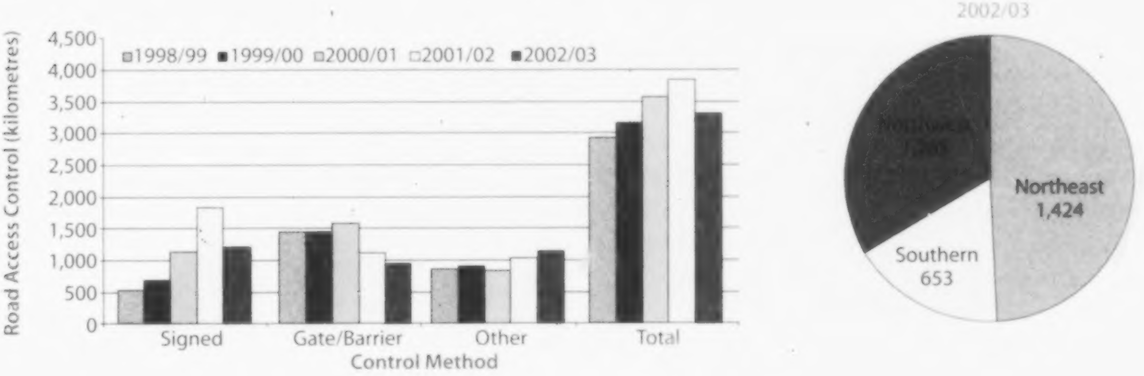
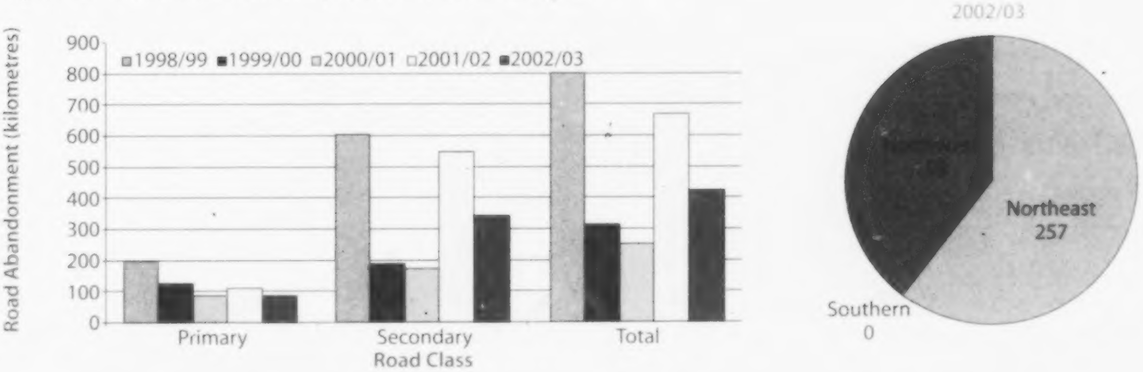
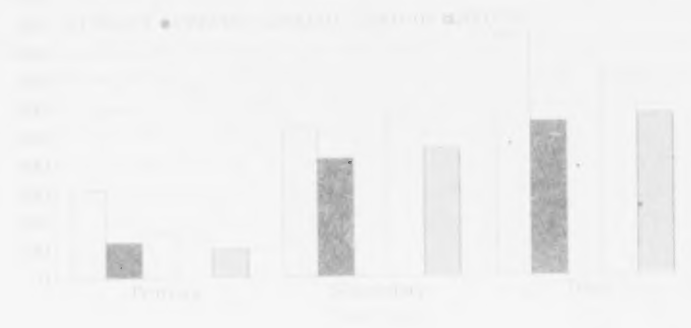
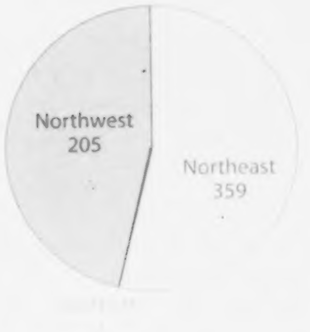
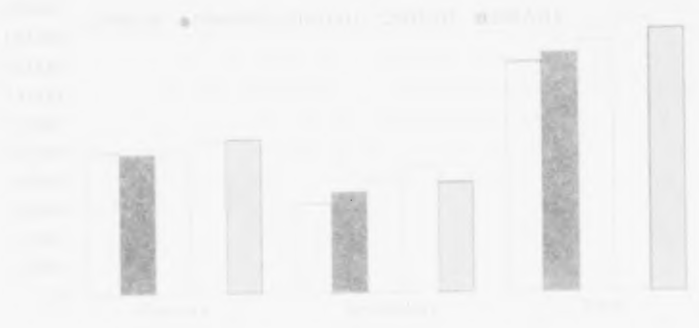


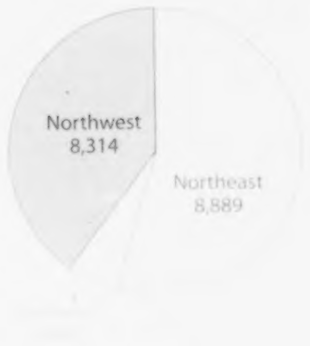
Figure 5d Road abandonment by road class and MNR region.











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Road Access Control and Abandonment

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[illegible]

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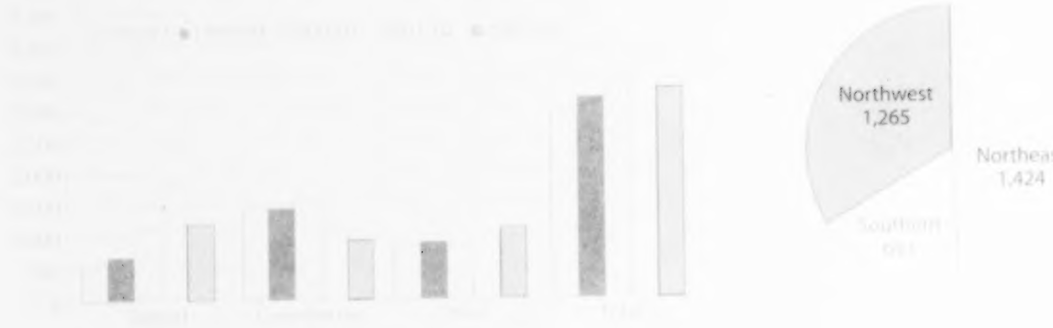

Northwest
1,265
Northeast
1,424
Southern

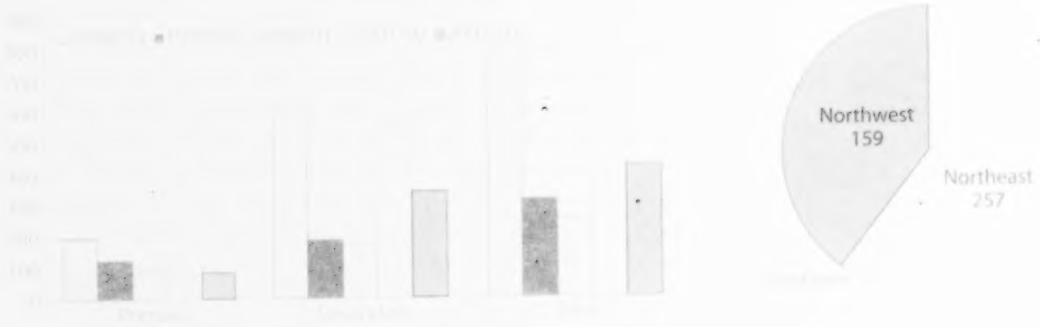
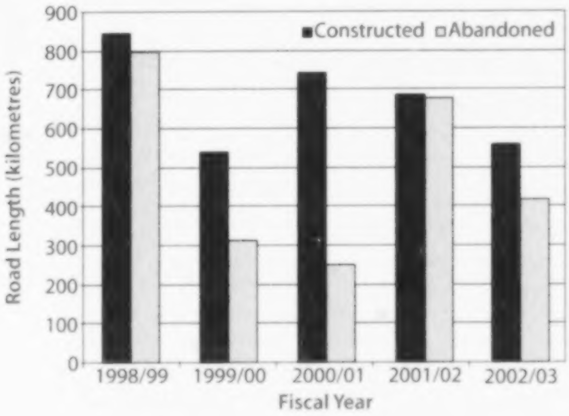

Northwest
159
Northeast
257

Figure 5e shows a comparison of total provincial forest access road construction and abandonment over the last 5 years. During this time 3,369 kilometres of access road have been constructed, and 2,446 kilometres have been abandoned.

Figure 5e Road construction and abandonment.



ACCESS CONTROL

The closure of a road to public travel or the restricted access to a road for certain specified uses for given periods of time.

ROAD ABANDONMENT is the use management strategy adopted when a road has fulfilled its original use and is no longer required, or when maintenance cannot be justified.

NATURAL ABANDONMENT is the natural degradation of a road when it is not maintained. Road maintenance has ceased and steps are not taken to prevent the use of the road by vehicular traffic through means of physical disablement.

PHYSICAL ABANDONMENT is a deliberate act to render a road unusable by vehicular traffic. For example: gating, ditching, bridge or culvert removal.

Chapter 6
Forest Disturbance and Harvest

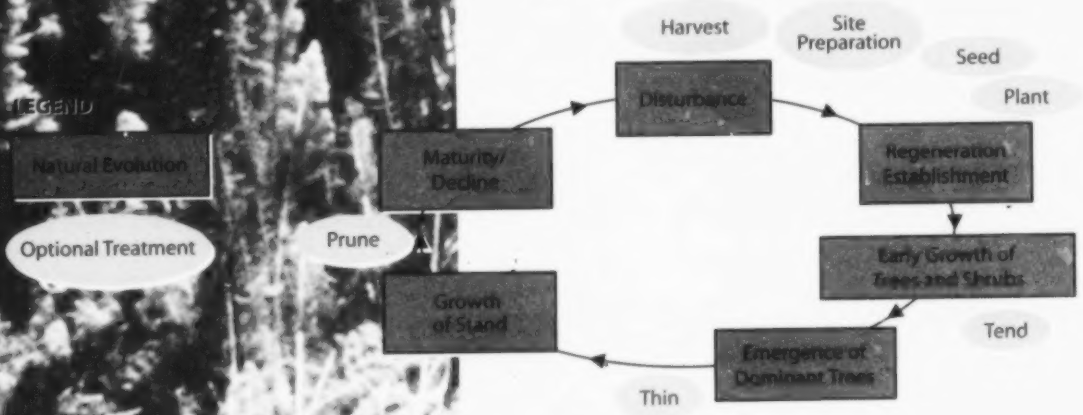
Natural disturbances[6] such as insects, diseases, severe weather events and forest fires occur throughout the life cycle of the forest, as illustrated in Figure 6a.

Forest disturbances (except for diseases) are measured both by area (hectares) and volume (cubic metres) of trees killed, damaged, or harvested. Losses to tree diseases are normally chronic, and are estimated by calculating an annual average volume loss for all chronic diseases. Area affected is not recorded for chronic diseases.

All estimates of disturbance area, both for the province and for the Area of the Undertaking (AOU), encompass all forest lands, including Crown forests, federal and private forest lands, and federal and provincial parks. Estimates for AOU disturbance volume, however, are based on Crown production forest lands only.

Forest inventory descriptions are changed when stands are impacted by disturbance. However, the degree of disturbance impact required before the inventory description is changed is a subjective decision. The most significant disturbances are reported in the fall of the year following a disturbance. Many disturbances reported in this 2002/03 report actually occurred during 2001/02. Reporting is delayed to allow time to completely map and inventory all disturbances that occurred during a given year.

Figure 6a The forest life cycle


LEGEND
Natural Evolution
Optional Treatment
Harvest
Site Preparation
Seed
Plant
Disturbance
Regeneration Establishment
Early Growth of Trees and Shrubs
Tend
Emergence of Dominant Trees
Thin
Growth of Stand
Prune
Maturity/ Decline

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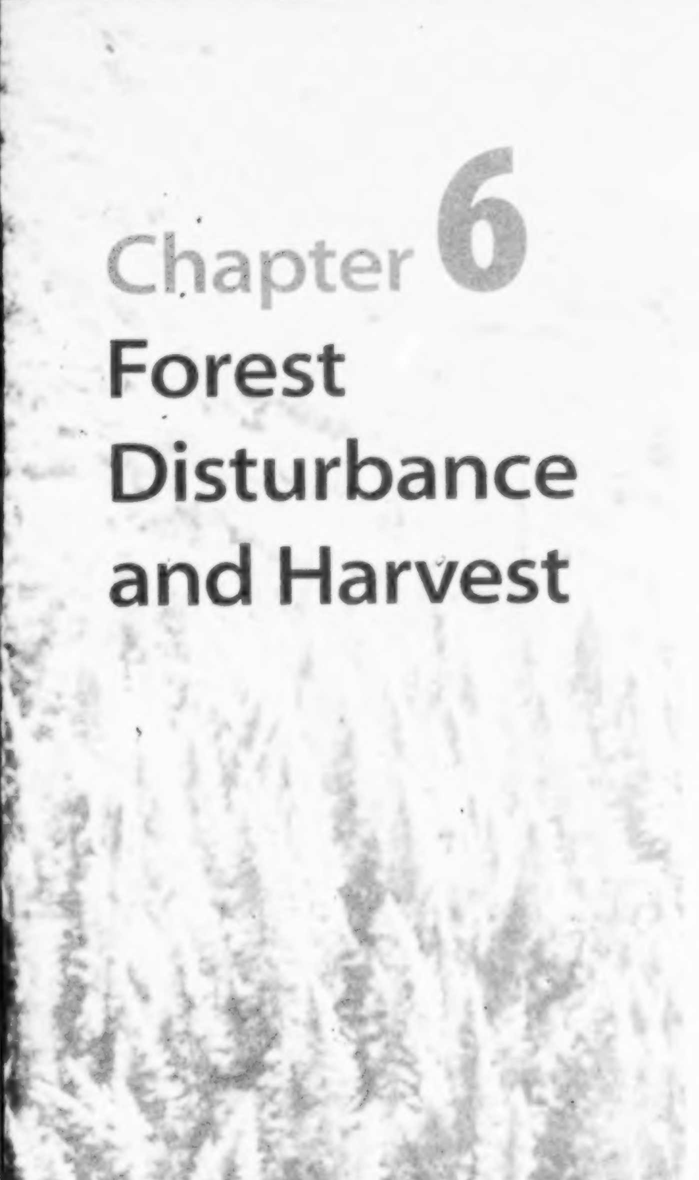
[6] Natural disturbance impacts are reported for both Crown and private land within the Area of the Undertaking. Harvest area is reported for Crown land only.



Chapter 6

Forest Disturbance and Harvest

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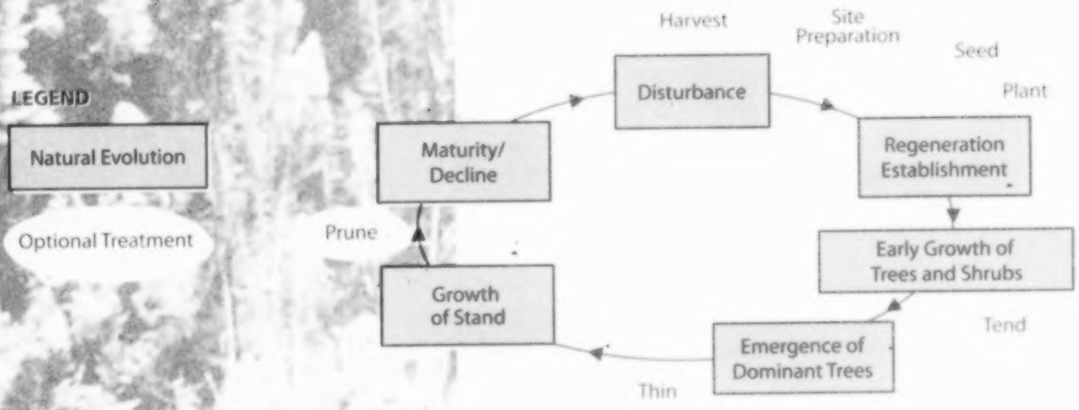
LEGEND
Natural Evolution
Optional Treatment
Harvest
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Plant
Disturbance
Maturity/ Decline
Regeneration Establishment
Prune
Early Growth of Trees and Shrubs
Growth of Stand
Tend
Emergence of Dominant Trees
Thin

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[8] Natural disturbance [illegible]

Natural Disturbances

Natural disturbances include fire disturbances, and damage from insects, disease, and severe weather conditions. The intensity of these disturbances varies annually.

Forest Fires

The MNR records the area disturbed by forest fires across all the forested area of Ontario.

Area The number and size of forest fires varies dramatically year to year, depending on the weather. This variability is particularly noted in Figure 6b, where the last five years of provincial fire disturbance are shown. During the period 1997/98 to 2001/02, provincial annual fire disturbance was highest in 1999/00 at almost 330,000 hectares of forest burned. Within the AOU that year over 147,000 hectares burned. The smallest annual area disturbed by fire in the period occurred in 2000/01, when only 6,647 hectares were burned provincially (1,712 hectares in the AOU). The following year (2001/02) was also a low fire year, with only 10,000 hectares burned provincially, and 2,059 hectares burned in the AOU.

Figure 6b Area disturbed by forest fire.

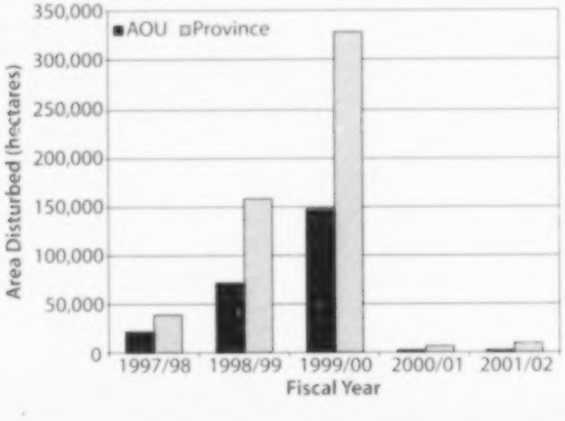


Table 6a Estimated wood volumes lost to forest fires within the AOU[1]

Disturbance Type	Volume Loss (cubic metres) 1997/98	1998/99	1999/00	2000/01	2001/02
Wildfire	1,351,139	2,163,315	1,669,829	10,995	109,539

[1] *Note that the numbers reported in Table 6a in the Annual Report on Forest Management 2001/02 were incorrect. The numbers reported in that table were for the entire province, not just for the AOU.*

AOU Volume Estimated total wood volume lost to forest fires in the AOU from 1997/98 through 2001/02 is shown in Table 6a. The trend in this table is similar to the trend in area burned. However, the highest volume lost to fire in the AOU during this period occurred in 1998/99 at over 2 million cubic metres, and the lowest volume burned, approximately 11,000 cubic metres, occurred in 2000/01.

Depending on the severity of the damage to trees from fire, it is often possible to conduct salvage activities in burned areas to harvest dead or damaged trees. These operations are reported as harvesting, and discussed later in this chapter.

Insects, Disease, Severe Weather

Estimates of area affected and wood volumes lost from 1997/98 through 2001/02 due to insects, disease, and severe weather are based on studies completed by the Forest Health Monitoring partnership between the Canadian Forest Service and the MNR. Depending on the severity of damage to trees from these disturbances, it is often possible to conduct salvage operations in disturbed areas to harvest timber and reduce economic losses and the threat of forest fires.

Insect Damage

The damaged area and volume loss caused by the most destructive insects are based on estimates of forested areas where 30 percent or more of the foliage was removed. Usually, a number of years of repeated defoliation is required to kill a tree. This varies for each pest, the tree species being attacked, and other factors. Forested areas may be defoliated by more than one insect. Area reported as defoliated may include different degrees of severity.

Area The total area infested by forest insects where growth loss and/or tree mortality have occurred for the last 5 years is presented in Figure 6c. Insect infestation area in the AOU where growth loss occurred was highest during this period in 2001/02, at over

12.7 million hectares. The infestation area where tree mortality has occurred was relatively stable in the AOU during the first 4 years of this period, averaging approximately 8 million hectares annually. This number dropped to only 7,367 hectares in 2001/02. Total provincial infestation area was lowest in 1997/98, at 11.4 million hectares, and highest in 2000/01 at almost 16.4 million hectares.

AOU Volume Insects causing significant damage to Ontario's forests include the spruce budworm, the jack pine budworm, the forest tent caterpillar, the gypsy moth, and a number of insects that chronically attack poplar and white birch. The estimated volumes lost in the AOU between 1997/98 and 2001/02, due to growth losses and mortality caused by damage from these insects, is reported in Table 6b. Spruce budworm has caused the greatest volume losses in total over the last 5 years, but losses from spruce budworm declined significantly in 2001/02, to only 100,000 cubic metres. Losses from forest tent caterpillar damage have been increasing since 1997/98 in the AOU, rising to over 2.3 million cubic metres in 2001/02.

Volume lost to insects can be lost either by reduced growth or by tree mortality. The estimated volumes lost in the AOU to forest insect damage from growth loss or tree mortality are illustrated in Figure 6d. During the 1997/98 to 2001/02 period, timber volume lost to growth loss increased from a low of approximately 550,000 cubic metres in 1997/98, to almost 2.5 million cubic metres in 2001/02. In contrast, volume lost to tree mortality declined to only 1,522 cubic metres in 2001/02, from a high of 7.2 million cubic metres in 1997/98.

The value for insect infestation area where growth loss has occurred, and the volume lost due to growth

Figure 6c Area infested by forest insects.

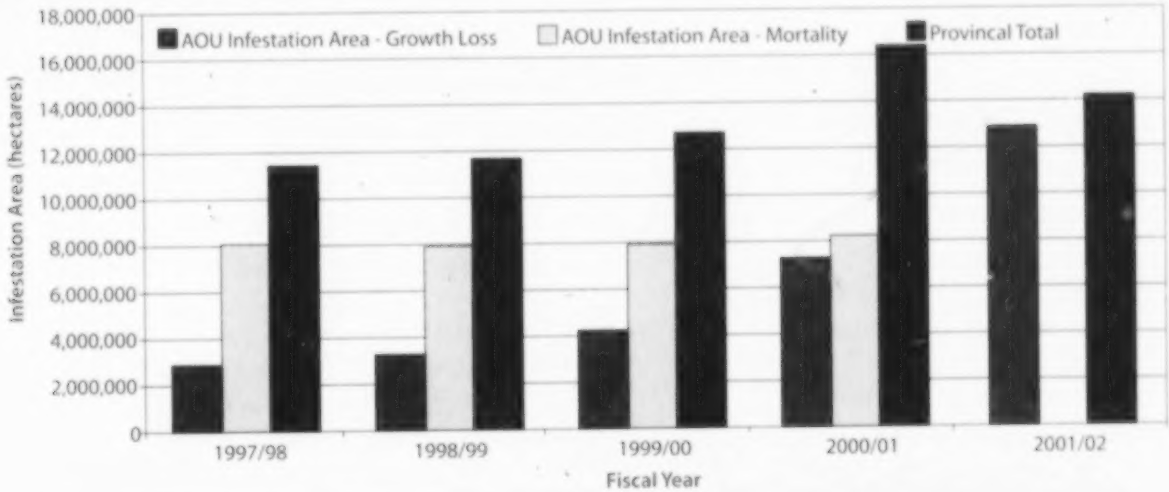
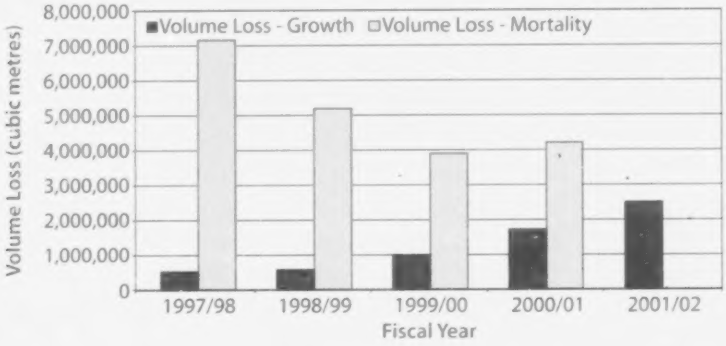


Table 6b Estimated wood volumes lost to insects within the AOU

	Volume Loss (cubic metres)				
Insect	**1997/98**	**1998/99**	**1999/00**	**2000/01**	**2001/02**
Spruce Budworm	7,177,639	5,208,468	3,921,618	4,215,458	99,760
Jack Pine Budworm	25,205	0	0	0	0
Forest Tent Caterpillar	421,976	564,622	848,682	1,693,114	2,347,325
Gypsy Moth	0	0	21	0	1,725
Other Poplar/Birch Insects	110,557	40,847	168,394	15,860	3,443
Other Insects	0	0	284	0	0
Total	**7,735,378**	**5,813,937**	**4,938,999**	**5,924,431**	**2,452,253**

Figure 6d Estimated AOU volume lost to forest insects.



loss, appear to be on a rising trend in the AOU since 1997/98. However, the infestation area where mortality occurred, and volume lost to mortality, both declined to very low levels in 2001/02.

Diseases

The change in area and volume in a forest stand that results from natural mortality every year is not usually significant enough to be recorded for inventory update purposes. For example, chronic diseases such as root rot may kill only a few trees scattered throughout a forest stand. Therefore, no area loss is recorded for most diseases. However, an estimate of the volume of wood in the dead trees and volume of growth loss in the remaining live trees is made. Volume estimates of the effects of chronic disease consist of growth and mortality losses caused by rot, stem decay, and foliage dieback.

Provincial Volume The estimated volume lost to disease for the last 5 years, from growth losses and from tree mortality, is presented in Figure 6e. Growth losses from tree disease on a provincial basis have been relatively stable since 1997/98, at approximately 12-13 million cubic metres lost annually. Volume losses to tree mortality from disease have been more variable, averaging 6.5 million cubic metres lost annually between 1997/98 and 2001/02, but peaking at almost 8.8 million cubic metres lost in 1998/99.

AOU Volume As shown in Table 6c, estimated annual volume losses from disease in the AOU in 2001/02 were almost 13 million cubic metres. Growth loss from decay amounted to almost 5 million cubic metres in 2001/02, while root rot mortality was over 4.1 million cubic metres. There was also significant growth loss to hypoxylon canker (2 million cubic metres) and dieback (1.5 million cubic metres) in 2001/02.

Severe Weather

Windstorm damage (commonly referred to as "blowdown"), drought, and cold weather damage (ice/snow/severe cold) are the most common weather disturbances causing significant tree mortality and volume losses. Windstorms occur periodically, but must affect a sizeable area to be recorded. The estimates for windstorm damage are reported by individual management units, and are not part of the estimates provided by the Forest Health Monitoring partnership.

Area The area reported as being damaged by severe weather between 1997/98 and 2001/02 is shown in Figure 6f. The total provincial area damaged in 2001/02 was almost 5.8 million hectares, relatively high but lower than the peak of almost 6.3 million hectares reported in 1998/99. In both of these years the major cause of weather damage was drought.

Figure 6e Estimated provincial wood volume lost to tree diseases.

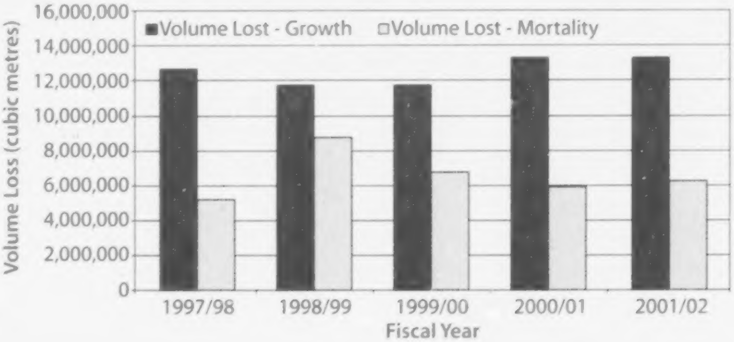
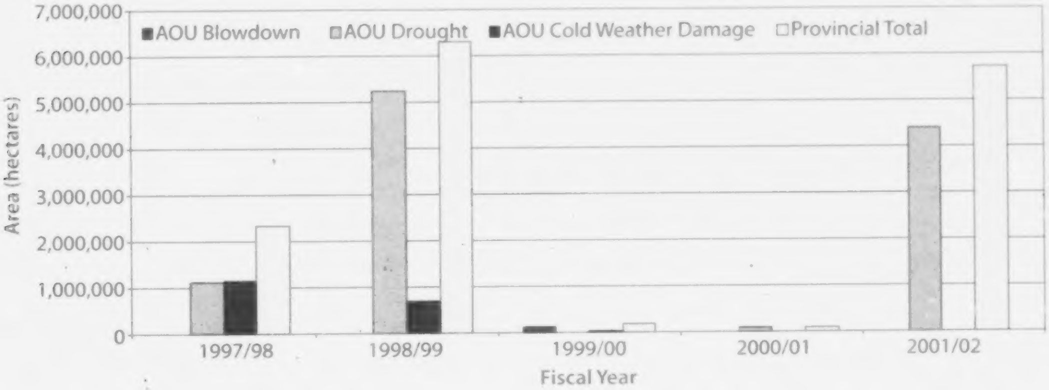


Table 6c Estimated wood volumes lost to disease within the AOU

Disease Type	1997/98	1998/99	1999/00	2000/01	2001/02
			Volume Loss (cubic metres)		
Volume Loss - Growth					
Decay	5,251,036	4,298,096	4,298,096	5,028,122	4,959,800
Dieback	1,559,038	1,457,322	1,457,322	1,547,164	1,494,351
Hypoxylon	2,001,272	2,032,607	2,032,607	2,093,934	2,026,317
Root Rot	301,425	266,519	266,519	235,040	222,525
Aspen Decline	0	0	48,623	32,954	133,511
Volume Loss - Mortality					
Root Rot	3,764,586	4,742,753	4,742,753	4,318,832	4,109,611
Stillwell Syndrome	0	1,711,531	0	0	0
Total Volume Loss	**12,877,358**	**14,508,828**	**12,845,920**	**13,256,046**	**12,946,115**

Figure 6f Severe weather damaged area.



AOU Volume The estimated severe weather volume loss in the AOU of almost 7.7 million cubic metres in 2001/02 (Table 6d) was relatively large, although significantly less than the estimated loss of over 13.3 million cubic metres in 1999/00. Most of the severe volume loss in 1999/00 was due to windstorm damage (which generally causes much greater volume loss per unit area than other types of weather damage), while most of the loss in 2001/02 was caused by drought. Damage from the ice storm in Eastern Ontario in January 1998 is not accounted for in these figures, because of the difficulty in quantifying volume losses from this unusual weather event.

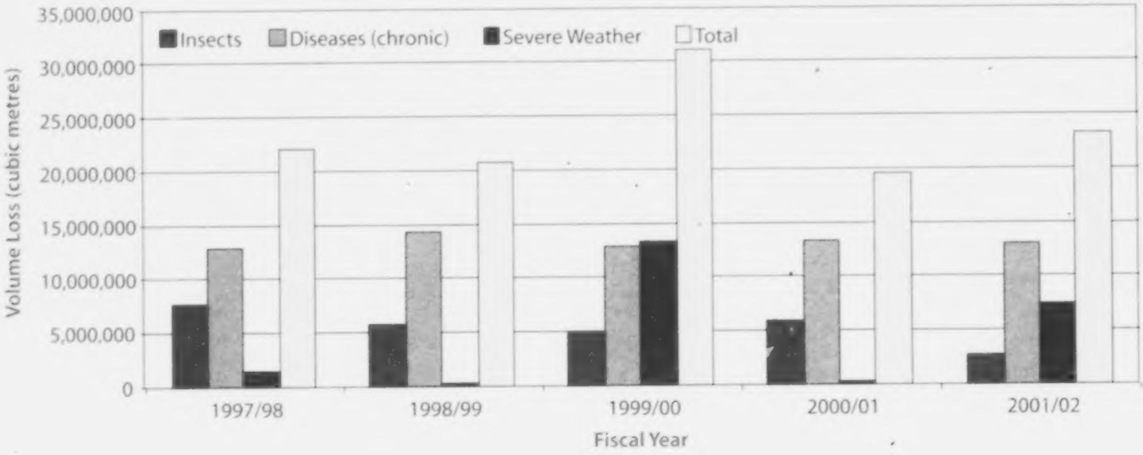
Combined Insects, Disease, Severe Weather Losses

AOU Volume Estimates of total wood volumes lost in the AOU from 1997/98 to 2001/02 due to insects, disease, and severe weather are illustrated in Figure

Table 6d Estimated wood volumes lost to severe weather within the AOU

Disturbance Type	1997/98	1998/99	1999/00	2000/01	2001/02
			Volume Loss (cubic metres)		
Blowdown	0	0	13,242,128	286,022	97,824
Drought	1,363,545	224,020	0	62,593	7,589,677
Cold Weather Damage	118,116	47,191	68,626	0	0
Total	**1,481,661**	**271,211**	**13,310,754**	**348,615**	**7,687,501**

Figure 6g Estimated AOU wood volume lost to insects, disease, and severe weather.



6g. This figure shows that combined losses were at their lowest in 2000/01 (approximately 19.5 million cubic metres) and at their highest in 1999/00 (over 31 million cubic metres).

Forest Harvest

The level of allowable harvest in a management unit is determined through the forest management planning process. The MNR requires that the allowable harvest for a management unit be set at a level that will sustain a healthy forest over time. Harvesting in each management unit is controlled and monitored according to the approved Forest Management Plan. These plans specify both allowable harvest area and the associated volumes. However, control of the allowable harvest is by area.

Natural Disturbance Pattern Emulation

The fundamental principle in emulating natural disturbance is to harvest and regenerate Ontario's forests in more natural patterns, ensuring that the needs of wildlife species are met and healthy diverse ecosystems with their many benefits are passed on to future generations. Under the *Crown Forest Sustainability Act* and subsequently with the publication of the *Forest Management Guide for Natural Disturbance Pattern Emulation* (NDPE Guide) in 2001, Ontario has been changing its forest practices so that forest biodiversity and natural processes are more proactively maintained. This is accomplished, in part, by emulating as closely as possible the landscape patterns (i.e. variation in size and shape) produced by forest fires, most notably during the implementation of the clearcut silvicultural system in the boreal forest. At the same time, MNR acknowledges that harvesting does not emulate all the effects of forest fires.

While forest harvesting can never exactly duplicate natural disturbances in the forest, the NDPE Guide promotes timber harvesting practices that emulate the natural range and pattern of fire disturbances - both small and large. This variation in harvest pattern creates desirable habitat for wildlife species. Smaller disturbances favour the creation of habitat for species such as moose, black bear and ruffed grouse, because this size of disturbance creates a lot of "edge" (where different forest types, features, or age classes come together). Larger disturbances, over time, create habitat for species which prefer large, uniform forests, such as the American marten, the woodland caribou, and the great grey owl. Wildlife species have evolved in forest patterns that have largely been shaped by wildfire. Therefore the widest possible range of wildlife species will benefit by emulating the broadest range of natural disturbance patterns.

Silvicultural Systems Used in Ontario

Harvesting in Ontario is one of a series of actions that, when combined with other actions of forest renewal and maintenance (e.g., tending, protection etc.) represents a silvicultural system. These systems are classified according to the method of harvesting. Ontario uses three silvicultural systems: selection, shelterwood, and clearcut.

Selection Silvicultural System

Mature, unhealthy or undesirable trees are continuously removed individually or in small groups over an entire area, throughout the forest life cycle. This method produces stands with trees of different ages and is referred to as uneven-aged management.

Shelterwood Silvicultural System

Mature trees are harvested in a series of two or more cuts to encourage natural regeneration and growth under or next to the residual trees. This is done by cutting trees uniformly over the stand area or in groups or narrow strips. Stands with trees approximately the same age are produced with this system.

Clearcut Silvicultural System

The volume available from areas harvested under this system is usually harvested in one operation. Individual trees within the harvest area and/or parts of forest stands are retained for silvicultural reasons (e.g., seed trees) or to provide protection for forest values (e.g., marten habitat). Regeneration methods used can be natural, assisted (e.g., planting) or a combination of both methods. This method produces stands where most of the trees are at about the same age, and is referred to as even-aged management.

Average and Maximum Size of Clearcuts

The *Crown Forest Sustainability Act* requires "using forest practices that within the limits of silvicultural requirements, emulate natural disturbances and landscape patterns while minimizing adverse effects on plant life, animal life, water, soil, air, and social and economic values, including recreational values and heritage values". The Timber Class EA approval provides for a range of clearcut sizes, not to exceed 260 hectares, unless supported by sound biological or silvicultural reasons. It also recognizes that a range of clearcut sizes is required. Efforts to provide a range of disturbance sizes have resulted in some planned clearcuts being larger than 260 ha, with appropriate rationale provided in Forest Management Plans.

Cut patterns, sizes, and distribution are developed based on the applicable forest management guides in accordance with natural conditions, historical disturbance and landscape patterns, forest types, silvicultural characteristics of tree species, and fish and wildlife habitat needs. When appropriate, forest management operations within cut blocks are further altered or prohibited to protect identified site-specific forest values by implementing measures (e.g., reserves and harvest restrictions) specified in the guides.

The NDPE Guide provides direction to forest managers on designing harvest areas to more closely resemble natural disturbances by leaving more standing trees, as individuals and as peninsular and insular patches, scattered throughout irregularly-shaped harvest areas. It also contains guidance for measuring clearcut size. This Guide will be implemented on individual management units over five years as new Forest Management Plans are prepared, beginning with plans approved for implementation in 2003.

In this report, the area statistics for average and maximum size clearcuts often refer to the area cut in a particular year, without consideration of harvests in previous years or nearby clearcuts. The use of a consistent method of measuring and reporting clearcuts, including consideration of contiguous harvest from year to year, will improve in future reports as the NDPE Guide is implemented. Meanwhile, until clearcuts are measured and reported consistently throughout the province following the direction in the NDPE Guide, comparison of the average and maximum clearcut sizes between management units may not be valid.

Boreal Forest Other key forest management guides used to design clearcut sizes and patterns within the Boreal Forest include: *Timber Management*

Guidelines for the Provision of Moose Habitat and *Forest Management Guidelines for the Conservation of Woodland Caribou: A Landscape Approach.*

The provision of moose habitat includes direction for range management and specific stewardship for values such as aquatic feeding areas. In northwestern Ontario, in locations where significant woodland caribou populations occur, application of the woodland caribou guide takes precedence over application of the moose habitat guide for determination of clearcut size.

In 2001/02, 35 management units within the Boreal Forest reported average clearcut sizes ranging from 22 to 1,965 hectares. Maximum clearcut sizes reported ranged from 114 to 4,865 hectares.

Great Lakes-St. Lawrence Forest Harvest planning in the Great Lakes-St. Lawrence forest must account for historic natural disturbance regimes, cover types, landscape patterns and wildlife habitat management practices. It is assumed that the landscape-level needs of most species will be met if forest management is conducted to maintain a landscape with the same mix of ecosites and age classes in patterns similar to those that occurred in the natural presettlement forest. In the Great Lakes-St. Lawrence forest, the primary stand-replacing natural disturbance agents have been a combination of wind and fire events.

Through an ecosystem management approach to landscape-level management, forest managers attempt to address the habitat requirements of many wildlife species. The specific habitat requirements of selected species are also considered. Some species, such as pileated woodpecker, are area sensitive and need large blocks of forest. Other species such as white-tailed deer prefer small patches and an abundance of edge habitat. Some species, such as moose, require a complex mosaic of forest types and ages. To provide for a diversity of habitat needs when planning for forest harvest, a variety of harvest area sizes must be employed.

Over the past five years in the Great Lakes-St. Lawrence forest, the selection silvicultural system has been used in approximately forty five percent of the area harvested. The shelterwood silvicultural system has been employed in about thirty five percent of the area harvested. The clearcut silvicultural system has been used in the remaining twenty percent of the area harvested the Great Lakes-St. Lawrence forest type.

For the clearcut silvicultural system in 2001/02, 10 management units within the Great Lakes-St. Lawrence Forest reported average clearcut sizes ranging from 4 to 172 hectares. Maximum clearcut sizes ranged from 6 to 628 hectares.

Harvest Area

The area harvested annually using the three silvicultural systems, from 1997/98 through 2001/02, is shown in Figure 6h. Total area harvested using the clearcut silvicultural system decreased by almost 21,000 hectares (10.8%) in 2001/02. Area harvested using the shelterwood silvicultural system decreased in a similar proportion (10.2%), or by about 1,240 hectares. Area harvested using the selection silvicultural system decreased significantly in 2001/02 (25.4%), or by approximately 3,800 hectares.

Figure 6h Area harvested by silvicultural system.

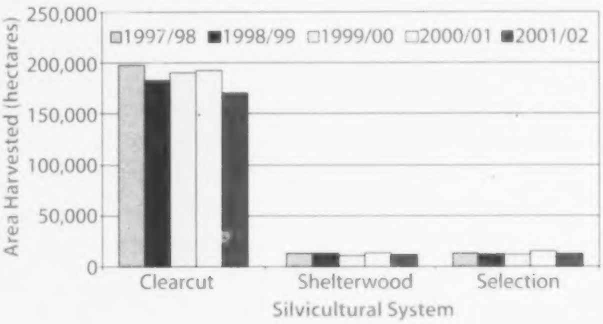
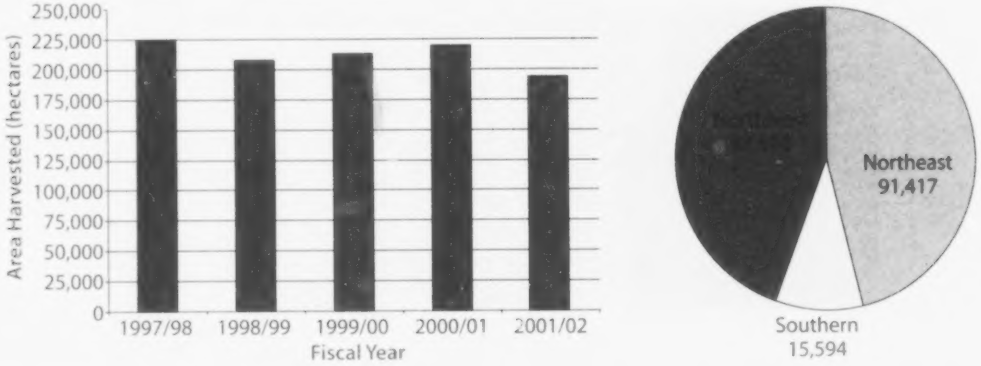


Figure 6i illustrates the total provincial area harvested from 1997/98 through 2001/02, and includes a summary by MNR region for 2001/02. The total harvest area decreased approximately 12 percent from 2000/01 to 2001/02, to 194,620 hectares, a 5-year low. During the 1997/98 to 2001/02 period, area harvested varied from a low of 194 thousand hectares in 2001/02 to a high of 224 thousand hectares in 1997/98, reflecting variations in factors such as market conditions, utilization, and forest access.

Figure 6i Area harvested by fiscal year and MNR region.



The Northeast Region (91,417 hectares) had the largest regional harvest area in 2001/02, representing 47 percent of the total, while the Northwest Region was second at 87,610 hectares, or 45 percent of the total. The Southern Region, which has a much smaller forest area, had the lowest total harvest of 15,594 hectares, or 8 percent of the total provincial harvest.

Figure 6j shows the total harvest area from 1997/98 to 2001/02 compared to the provincial area disturbed by fire for the same period. Over the past five years harvest area has fluctuated between 194,620 and 224,360 hectares, while fire disturbance area has varied from a low of only 6,650 hectares in 2000/01 to a high of 328,090 hectares in 1999/00.

When large areas are burned by fire or destroyed by windthrow or insects, forest companies often harvest some of the remaining dead and damaged wood. This salvage harvest is usually carried out a year or two following the disturbance. Figure 6k shows the area salvaged over the last five fiscal years. In 2001/02 about 14,260 hectares were salvage harvested, compared to 7,670 hectares in 2000/01.

Figure 6j Forest area disturbed by harvest and fire for all Crown land.

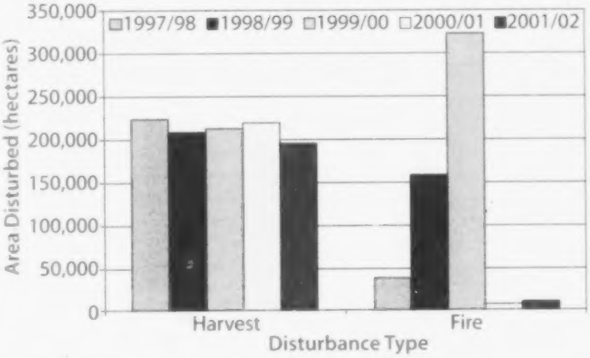
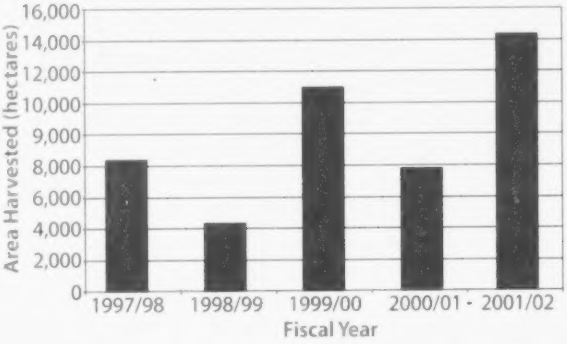


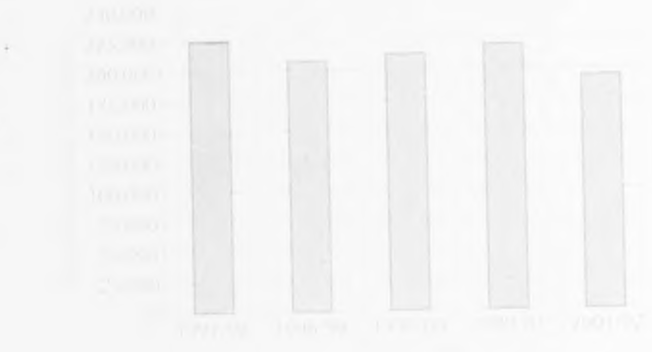
Figure 6k Salvage area harvested.

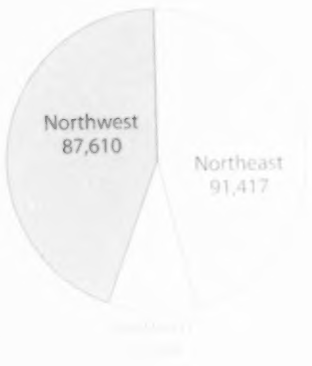


Harvest Volume

Total provincial softwood and hardwood volumes harvested from 1997/98 through 2001/02 are illustrated in Figure 6l. In 2001/02, the total provincial harvest volume was approximately 22.2 million cubic metres, an decrease of approximately 10% from the previous year's harvest volume. However the harvest in 2001/02 was only 2 percent less than the average harvest over the previous 4 years.

Over the past 5 fiscal years the volume of wood harvested per hectare has been increasing, from 99 cubic metres per hectare in 1997/98 to 114 cubic metres per hectare in 2001/02 (Figure 6m). This is likely due to changes in the types of stands harvested, delayed delivery of wood stored in the bush to mills, increased utilization, and/or changing market conditions.

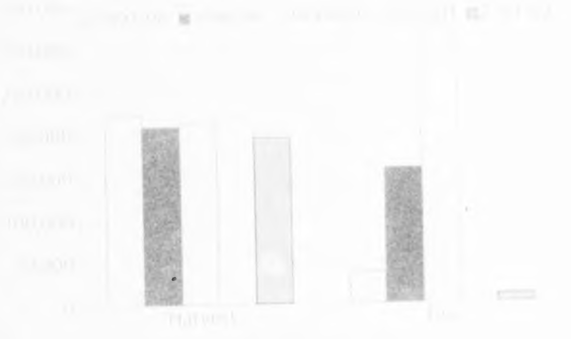


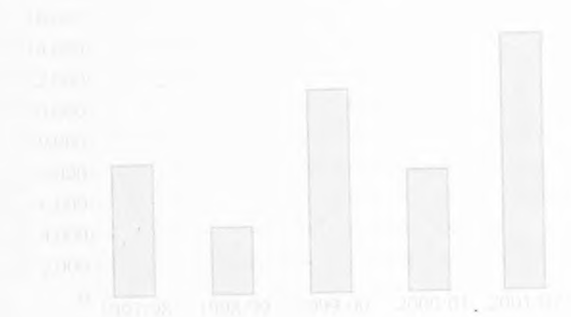


The Northeast Region (91,417 hectares) had the biggest planned harvest area in 2001/02, representing 47 percent of the [illegible]. The Northwest Region was second at 87,610 hectares, or 45 percent of the total. The Southern Region [illegible] harvest area had the lowest total harvest [illegible] hectares or 8 percent of the total provincial harvest.

Figure [illegible] shows the total harvest area from 1997/98 to 2001/02 compared to the area of land disturbed by fire for the same period. [illegible] 224,000 hectares [illegible] disturbance [illegible] in a high of [illegible] hectares in [illegible].

When large areas are burned by fire or disturbed by windthrow or insects, forest companies often try to salvage some of the remaining dead and damaged timber. This salvage harvest [illegible] following the disturbance. Figure [illegible] shows the [illegible] to about 13,000 hectares [illegible] compared to [illegible] hectares in 2000/01.





Harvest Volume

Total provincial softwood and hardwood volume harvested from 1997/98 through 2001/02 are illustrated in Figure [illegible]. In 2001/02, the total provincial harvest volume was approximately [illegible] million cubic metres, [illegible] of approximately [illegible] from the previous year's harvest volume. However, the harvest in 2001/02 was still [illegible] percent less than the average harvest over the previous [illegible] years.

Over the past 5 fiscal years, the volume of wood harvested per hectare has [illegible] from [illegible] cubic metres per hectare in 1997/98 to [illegible] cubic metres per hectare in 2001/02 [illegible]. This [illegible] changes in the types of stands harvested and [illegible] in the forest management [illegible].

Figure 6l Hardwood and softwood volumes harvested on Crown land.

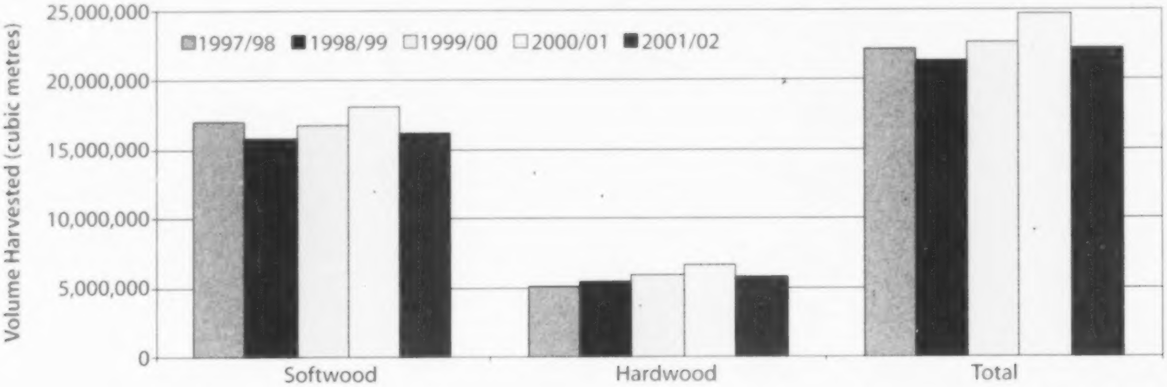
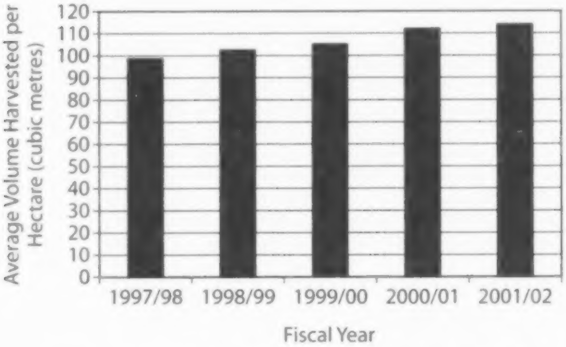
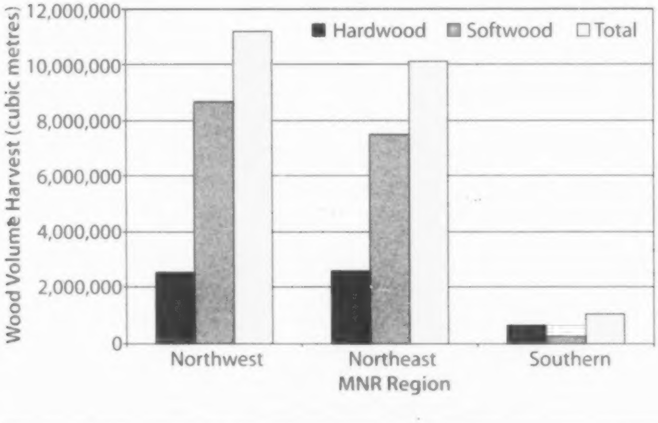


Figure 6m Average volume of wood harvested per hectare.



Wood volumes harvested in 2001/02 in the MNR's three regions are shown in Figure 6n. The 2001/02 regional harvest volumes were: 11.2 million cubic metres, or 50.2 percent of the total harvest volume in the Northwest Region; 10.0 million cubic metres, or 45.2 percent of the total harvest volume in the Northeast Region; and, 1.0 million cubic metres, or 4.6 percent of the total harvest volume in Southern Region. Softwood tree species accounted for 73.4 percent of the total harvest volume, with a harvest of over 16 million cubic metres. This is a ten percent decrease over the 2000/01 softwood harvest. The hardwood harvest volume of almost 6 million cubic metres accounts for 26.6 percent of the provincial harvest total. This is an 11 percent decrease over the 2000/01 hardwood harvest volume.

Figure 6n Wood volume harvested by MNR region and species group, 2001/02.



The harvest volumes by individual species for 1997/98 through 2001/02 are shown in Table 6e. Ontario's forest harvest in 2001/02 decreased approximately 10 percent over the previous year, due primarily to decreases in the harvest of spruce (mostly black spruce), jack pine and poplar, the 3 major species harvested in Ontario. The harvest of most species decreased during this time, with the exception of red pine and larch. Fluctuations in the harvest volumes of individual tree species from year to year are largely due to changes in market demand, and variations in the species encountered on the areas harvested.

Harvest Volume Compared to Other Disturbances

A comparison of wood volumes affected by natural and human disturbances to the forest, including insects, disease, weather, wildfire and harvest, are shown in Figure 6o for the five-year period from

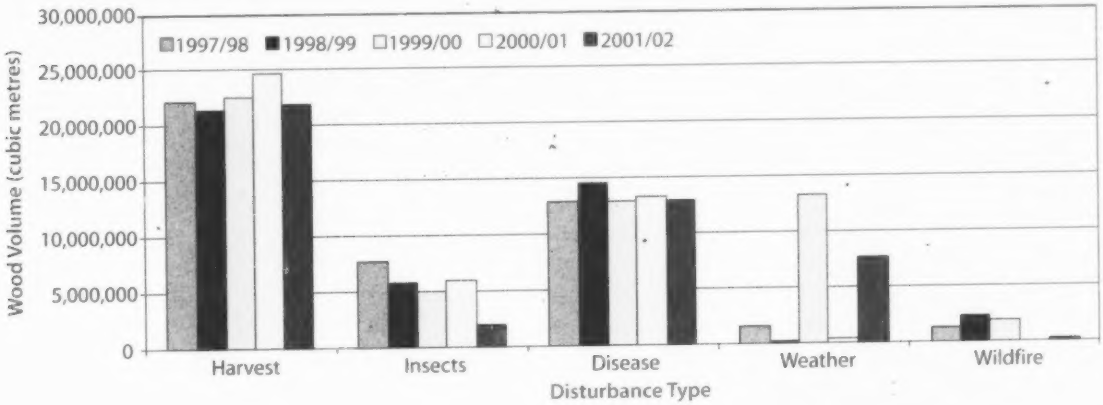
Table 6e Harvest volume by species (cubic metres)

Softwood Species	**1997/98**	**1998/99**	**1999/00**	**2000/01**	**2001/02**
White Pine	400,378	428,476	487,382	447,107	402,704
Red Pine	212,210	228,838	210,434	227,590	237,374
Jack Pine	6,249,545	5,967,239	5,742,312	6,317,096	5,732,524
Spruce	9,311,204	8,632,913	9,630,317	10,346,407	9,323,304
Hemlock	11,845	15,874	19,540	26,485	21,430
Balsam	642,314	524,967	581,037	669,494	527,374
Cedar	5,950	11,541	26,348	25,015	16,877
Tamarack	15,108	24,940	23,211	26,502	30,061
Other Softwoods	194,308	2,193	0	134	0
Total Softwoods	**17,042,862**	**15,836,981**	**16,720,581**	**18,085,830**	**16,291,649**
Hardwood Species	**1997/98**	**1998/99**	**1999/00**	**2000/01**	**2001/02**
Maple	544,081	432,590	465,364	585,161	471,533
Yellow Birch	51,754	35,137	30,138	47,807	38,893
White Birch	238,855	265,682	269,613	392,409	389,651
Oak	22,950	39,224	31,709	38,597	29,365
Beech	34,264	30,730	26,802	36,121	26,981
Poplar	4,168,609	4,635,851	5,033,829	5,532,833	4,946,318
Basswood	13,730	12,981	12,327	18,638	11,745
Ash	3,297	3,134	3,306	5,491	3,463
Other Hardwoods*	65,568	45,150	1,155	1,580	1,088
Total Hardwoods	**5,143,108**	**5,500,479**	**5,874,243**	**6,658,637**	**5,919,037**
Provincial Total	**22,185,970**	**21,337,460**	**22,594,824**	**24,744,466**	**22,210,686**

* *The volumes for black cherry, ironwood, butternut, and elm are too small to be shown individually. They have been added together under Other Hardwoods.*

1997/98 to 2001/02. Over this time frame the effects of weather and wildfire were variable, while wood volume lost to disease has been relatively constant. Fire volume losses were highest in 1998/99 at approximately 2.2 million cubic metres, while the smallest annual fire loss occurred in 2000/01 when only 11 thousand cubic metres were burned. Harvest volume reached its highest level in 2000/01 at 24.7 million cubic metres, while averaging approximately 22 million cubic metres over the other 4 years during this period. Losses to insects have declined significantly, from 7.7 million cubic metres lost in 1997/98, to only 2.5 million cubic metres lost to insects in 2001/02.

Figure 6o Wood volume for harvest and other disturbances in the AOU



Chapter 7

Forest Renewal and Maintenance

Under the terms of the *Crown Forest Sustainability Act*, forest managers are responsible for fully renewing the forests where they operate. Sustainable Forest Licence (SFL) holders must ensure that harvested areas are renewed to the specific silvicultural standards established in forest management plans, to ensure the long-term health of Crown forests. Long-term forest health is also promoted by forest maintenance operations. These operations include tending carried out to improve the survival, growth, or quality of a regenerating forest, and protection operations carried out to manage or prevent the damage caused by forest insects and diseases.

Forest Renewal

Activities needed to ensure the successful regeneration of all harvested areas are specified in all approved forest management plans in Ontario. Crown forests are renewed by both assisted and natural regeneration techniques, and these activities are reported annually.

Planting and seeding are the two most common types of assisted regeneration. Planting includes planting of bareroot and container seedlings. Container seedlings now comprise over 99 percent of the stock used in planting programs across Ontario. Seeding may be carried out directly from aircraft or by broadcast seeders on the ground. Renewal activities also include preparing an area disturbed by harvest or natural causes for regeneration through mechanical or chemical means, or by prescribed burning. The regeneration establishment period, from harvest to completion of the planting or seeding, can take up to five years.

Many tree species can re-establish themselves on a site without planting or seeding. These natural mechanisms include seeding from the adjacent forest or from cones left on site after the harvest (jack pine), suckering of stumps and roots (poplar), and continued growth of young trees remaining on the harvested area (black spruce). This natural regeneration can be enhanced through careful selection of the silvicultural system and harvest method (see Chapter 6).

In the past, reporting of natural regeneration annually at the time of harvest was not emphasized because some forest managers preferred to report it periodically after regeneration surveys had been completed. This delay in reporting, plus the regeneration establishment period, has in the past resulted in the reported annual renewal levels being substantially less than the reported annual harvest levels. With new reporting procedures introduced in 1996, natural regeneration is now reported promptly upon completion of the harvest.

Table 7a summarizes the renewal operations conducted on Crown land in 2002/03 for the province and for each MNR region. The area renewed in 2002/03 includes treatments on areas harvested or naturally depleted in 2001/02 or earlier.

The choice of silvicultural system or harvest method used is largely dependent on the biological requirements of the different tree species (see Chapter 6, Forest Disturbance and Harvest). Regeneration under the uneven-aged selection silvicultural system, is carried out in tolerant hardwood stands in the Southern Region and, to some extent, in the Northeast Region. Approximately 13 percent less area was reported as regenerated using this system in 2002/03 than in 2001/02.

The clearcut silvicultural system is the primary system used in the boreal forest of the Northeast and

Table 7a Provincial renewal operations, 2002/03

Regeneration	Northwest	Northeast	Southern	Total
UNEVEN-AGED MANAGEMENT				
Selection system (hectares)		1,584	8,993	**10,577**
Subtotal uneven-aged management		**1,584**	**8,993**	**10,577**
EVEN-AGED MANAGEMENT				
Natural regeneration (hectares)				
Clearcut system	16,318	35,214	2,590	**54,121**
Strip cut			16	**16**
Seed tree cut	11	7,280	282	**7,573**
Shelterwood system		2,324	3,433	**5,757**
Subtotal Natural Regeneration	**16,329**	**44,818**	**6,321**	**67,467**
Assisted regeneration				
Planting (hectares)	46,641	42,885	2,286	**91,812**
Trees (000's)				
Bareroot	487		476	**962**
Container	66,133	63,517	1,524	**131,174**
Seeding (hectares)				
Direct	12,245	2,837		**15,082**
With site preparation	1,729	633		**2,362**
Scarification (hectares)	25	16	95	**135**
Subtotal Assisted Regeneration (hectares)	**60,640**	**46,370**	**2,381**	**109,391**
Subtotal even-aged management (hectares)	**76,968**	**91,188**	**8,702**	**176,858**
TOTAL REGENERATION (hectares)	**76,968**	**92,772**	**17,694**	**187,434**
SITE PREPARATION (hectares)				
Mechanical	36,865	24,546	1,365	**62,775**
Chemical	2,131	2,912	70	**5,113**
Prescribed burn			143	**143**
TOTAL SITE PREPARATION (hectares)	**38,996**	**27,458**	**1,578**	**68,031**

[1] This table includes data reported from 2001/02 for the following 3 management units: Caribou, Nipissing, and Shingtree. Data for 2002/03 was not submitted from these 3 management units in time for this report.

Northwest regions, mainly in stands containing jack pine, black spruce, poplar, and white birch. Approximately forty-four percent less area was reported as naturally regenerated under the clearcut system in 2002/03 than in 2001/02.

Regeneration using the strip cut method is a variation of the clearcut silvicultural system. It involves the removal of the stand in progressive strips or blocks in more than one operation. The strip cut method is prescribed to encourage natural regeneration, provide wildlife habitat, protect fragile sites, or for aesthetics. Regeneration using the seed tree method is also a variation of the clearcut silvicultural system. It involves the removal of all commercial trees from an area, except for a small number of seed-bearing trees left singly or in small groups for regeneration purposes. The seed tree method is used primarily in white pine and red pine stands in the Northwest and Northeast regions.

Natural regeneration using the shelterwood system is used mainly in white pine and tolerant hardwood stands in the Northeast and Southern regions. Approximately 30 percent less area was reported as regenerated using this system in 2002/03 than in 2001/02.

The area reported as regenerated using the selection system in 2002/03 was about 83% of the average of the area reported as regenerated during the previous 4 years (Figure 7a). The area reported as naturally regenerated using the shelterwood system in 2002/03 shows a similar trend, down to approximately 65% of the average of the area reported as regenerated during the previous 4 years.. The area reported as naturally regenerated under the clearcut system was also down, to about 76% of the average of the area reported as regenerated during the previous 4 years. However, the area reported as naturally regenerated under the clearcut system was up 20% over the area reported back in 1998/99.

The total area of natural regeneration reported in all forest types under even-aged management was significantly lower in 2002/03 than in the previous 4 years – down 20 percent from the average of those 4 years (Figure 7b).

Assisted regeneration activities declined 6 percent from 2001/02 to 2002/03, but have increased approximately 2 percent since 1998/99 (Figure 7b). The total number of seedlings planted in 2002/03 was 132 million, an decrease of almost 12 percent from 2001/02, but a decrease of only 1 percent since 1998/99 (Figure 7c). The use of bareroot seedlings further decreased in 2002/03, and bareroot seedlings now account for less than one percent of the total planting activity in the province. Container stock was used in the other 99 percent of the program. This follows the continuing industry trend towards the greater use of container stock to meet planting requirements.

Figure 7a Regeneration area by silvicultural system.

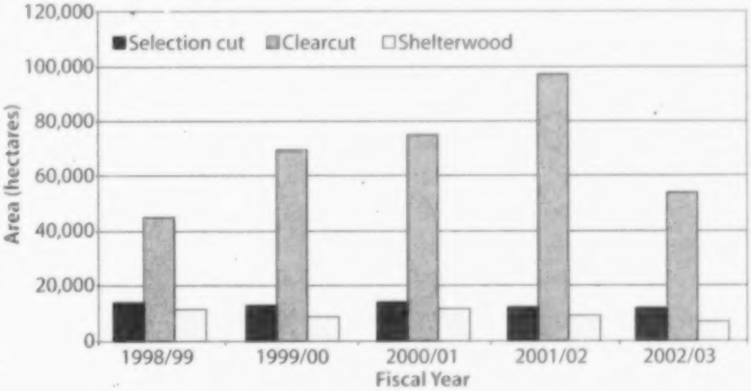
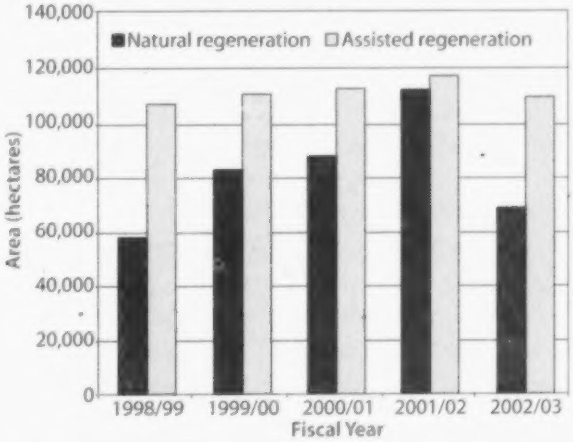


Figure 7b Natural and assisted regeneration area.



Jack pine is the main species used for seeding, most of which occurred in the Northwest region. The overall seeding levels in 2002/03 were down almost 8 percent from 2001/02, and 11 percent from the average of the previous 4 years. Mechanical site preparation is the main site preparation method used in all regions, followed by chemical site preparation, then prescribed burning. Provincially, the total area treated with site preparation decreased almost 16 percent from 2001/02 to 2002/03, and is approximately 22 percent lower than the average of the previous 4 years. (Figure 7d)

The total reported level of regeneration (including both natural and assisted regeneration) decreased 22 percent in 2002/03 compared to 2001/02, but has increased almost 5 percent since 1998/99 (Figure 7e). Regeneration levels tend to follow fluctuations in harvest and, to a lesser degree, forest depletions from natural causes such as forest fires and insect epidemics. The provincial forest regeneration level of 187,434 hectares reported in 2002/03 is the 2nd lowest in the last five years.

Comparison of harvest and regeneration levels on an annual basis is not appropriate because of the regeneration establishment period and the reporting delay. Comparison of average harvest and regeneration levels over a five-year period is more appropriate. The average total provincial harvest area from 1996/97 to 2000/01 was approximately 215,300 hectares. The average total provincial regeneration level from 1998/99 to 2002/03 was approximately 205,500 hectares, or approximately 5 percent less than the average harvest level. More complete reporting requirements have resulted in regeneration levels growing closer to, and sometimes exceeding, harvest levels over the last few years (Figure 7f).

Figure 7c Total number of trees and container stock planted.

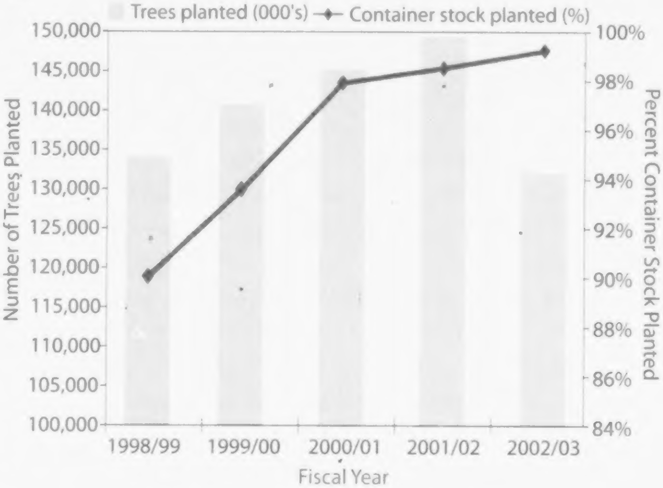


Figure 7d Seeding and site preparation area.

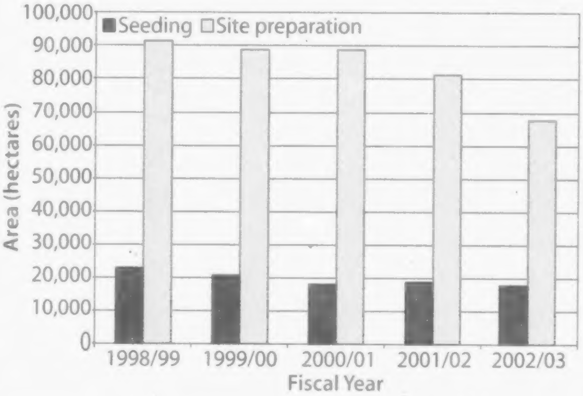
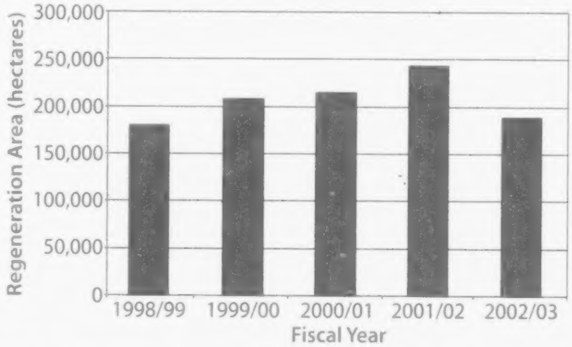


Figure 7e Provincial forest regeneration area.



In the Southern region, renewal treatments in 2002/03 increased over the previous year, in comparison to the Northwest and Northeast regions where the number of hectares treated decreased. Total regeneration area increased by 36% in Southern Region in 2002/03. In comparison to 2001/02, uneven-aged management natural regeneration increased by almost 19%, even-aged natural regeneration doubled overall (increasing significantly in both clearcut and shelterwood systems), while the level of assisted regeneration activities remained the same. Site preparation in Southern region also increased in 2002/03 by 9%, mainly due to increases in prescribed burning and mechanical site preparation.

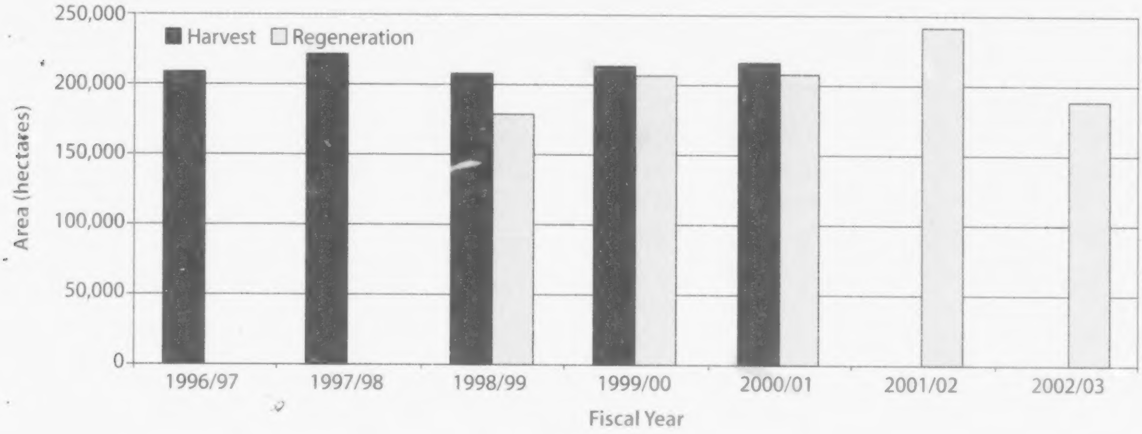


Figure 7f Five-year harvest and regeneration area in Ontario.

Forest Maintenance

Tending

Tending includes the operations of weeding, cleaning, thinning, spacing, and cultivation. Forest tending operations are carried out to improve the survival, growth, or quality of a regenerating forest. Tending may be done in young stands to help attain Free-To-Grow status (for more information on Free-To-Grow, see Chapter 8, Silvicultural Effectiveness Monitoring), or conducted in uneven-aged stands to maintain the desired age-class distribution and volume.

Table 7b summarizes the tending activities conducted on Crown land in 2002/03, for the province and for each MNR region. Reported levels of tending were down almost four percent in 2002/03 from 2001/02.

The total area tended is down almost 8 percent provincially from the average of the previous 4 years. Both manual cleaning and aerial chemical tending declined 15 percent over the average of the previous 4 years. However in 2002/03 ground chemical application was at its highest level in the past 5 years (Figure 7g).

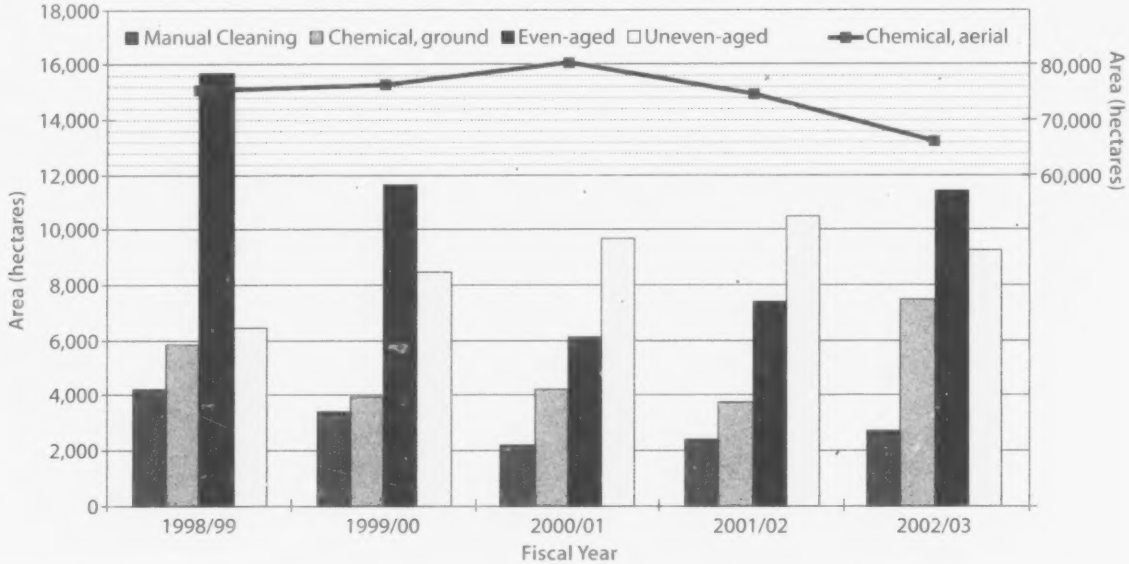
In 2002/03 both even-aged tending (spacing, precommercial thinning and improvement cutting) and uneven-aged tending were at higher levels than the average of the previous 4 years. Even-aged tending was up over 9 percent, while uneven-aged tending was at a level almost 5 percent higher than the previous 4 year average.

Table 7b Provincial Tending Activities, 2002/03[1]

Tending (hectares)	Northwest	Northeast	Southern	Total
Cleaning				
Manual	713	1,143	725	2,581
Chemical - ground	2,187	3,911	1,384	7,481
Chemical - aerial	23,752	40,346	858	64,956
Mechanical				0
Spacing, Precommercial Thinning, Improvement Cutting				
Even-aged	6,770	3,530	984	11,284
Uneven-aged		1,577	7,634	9,211
Total Tending	**33,422**	**50,507**	**11,584**	**95,513**

[1] This table includes data reported from 2001/02 for the following 3 management units: Caribou, Nipissing, and Shingtree. Data for 2002/03 was not submitted from these 3 management units in time for this report.

Figure 7g Provincial tending activities.



SELECTED SILVICULTURE DEFINITIONS

BAREROOT STOCK

Seedlings that have been grown in an outdoor environment and in the soil of a compartment in a nursery. These seedlings are lifted and the soil removed from the roots prior to shipment for planting.

CONTAINER STOCK

Seedlings, usually grown in a controlled environment such as a greenhouse, in some form of container. These seedlings, when shipped for planting, retain the growing media around their roots.

SITE PREPARATION

Disturbance of the forest floor, upper soil horizons and vegetation to create suitable conditions for assisted regeneration by mechanical or chemical means, or by prescribed burning.

SCARIFICATION

Mechanical preparation of a site for natural regeneration.

PRESCRIBED BURN

The knowledgeable application of fire to a specific land area to accomplish predetermined resource management objectives.

CLEANING

A manual, mechanical, or chemical operation in a young stand to reduce, eliminate, or suppress undesirable competing vegetation. Cleaning promotes survival and growth in desirable trees by removing competing vegetation of similar age that may overtop them, or are likely to do so.

IMPROVEMENT CUTTING

The elimination or suppression of less desirable trees in favour of more desirable ones, typically in a mixed, uneven-aged stand.

THINNING

A cutting made in an immature stand to accelerate growth of the trees left uncut. The goal is to foster quality growth and improve sanitation.

COMMERCIAL THINNING

Removing trees from a developing young stand so the remaining trees will have more growing space, dead and dying trees will be salvaged, and the operation will make a net profit.

PRUNING

The removal of live or dead branches from a standing tree to improve wood quality.

In Southern region, maintenance treatments increased over last year in comparison to the Northwest and Northeast regions, where the total number of hectares treated decreased. Tending increased by 31% in Southern region in 2002/03, mainly in chemical ground cleaning and in spacing, pre-commercial thinning and improvement cutting for both even-aged and uneven-aged systems.

Protection

Protection operations prevent or manage the damage caused by insects and diseases. No forest protection activities were reported in 2002/03.

Funding for Forest Renewal and Maintenance

The financial mechanisms established under the *Crown Forest Sustainability Act*, and outlined in Chapter 4, ensure that there is funding available for forest renewal and maintenance.

Each company with a SFL contributes the appropriate level of renewal charges to an account in the Forest Renewal Trust Fund, which may only be used to conduct eligible silviculture work on the specific licence area from which the monies were generated upon harvest.

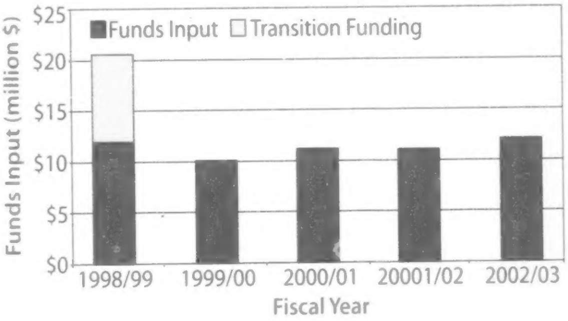
Operators with a Forest Resource Licence, who do not operate on a SFL, pay their renewal charges into the Forest Renewal Special Purpose Account. This account provides dedicated funding for forest renewal and tending on management units where harvesting and other operations are conducted on Crown land where no SFL is in place.

The MNR is responsible for administration of the Forest Renewal Special Purpose Account. As with the Forest Renewal Trust Fund, each forest or management unit has its own separate account to cover forest renewal and tending costs.

Money for a third fund, the Forestry Futures Trust, comes from a portion of the Crown charges that all licensees pay. In addition, any administrative penalties assessed under the *Crown Forest Sustainability Act* are paid into the Forestry Futures Trust Fund. This account, managed by an independent Crown committee, funds projects that meet MNR-approved criteria. To qualify, projects must be: a silvicultural activity on Crown land that addresses renewal of trees killed or damaged by fire; renewal of land where a licensee becomes insolvent; forest protection from insect or disease infestation; intensive stand management related to a critical wood supply; or, expenditures for Independent Forest Audits, Forest Resource Inventories, or conversion charges[7].

The annual contributions to the Forestry Futures Trust Fund since 1998/99 are presented in Figure 7h. Note that transition funding was at one time provided by the MNR to the Forest Renewal Trust accounts and Forest Renewal Special Purpose Accounts to provide start-up capital and to ensure the ongoing viability of the accounts. This transition funding amounted to $8.4 million in 1998/99. Total funds deposited to the Forestry Futures Trust Fund in 2002/03 amounted to approximately $11.9 million.

Figure 7h Funds input to the Forestry Futures Trust Fund.



In addition to these trust funds and special purpose accounts, the MNR supports forest renewal through the operation of the Ontario Tree Seed Plant and tree improvement programs.

Total forest renewal and maintenance expenditures in 2002/03 totalled $98.3 million. The source of these expenditures is presented in Table 7c. The reporting mechanism for renewal and maintenance expenditures from the Forestry Futures Trust Fund was changed in 2001/02. The amount reported now includes only project disbursements. In annual reports prior to 2001/02, other disbursements were included in the reported total, including expenditures for Independent Forest Audits, Forest Resources Inventories, and conversion charges.

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[7] Conversion charges are used to assist new, smaller SFLs with costs associated with the establishment of an SFL (e.g., inventory).

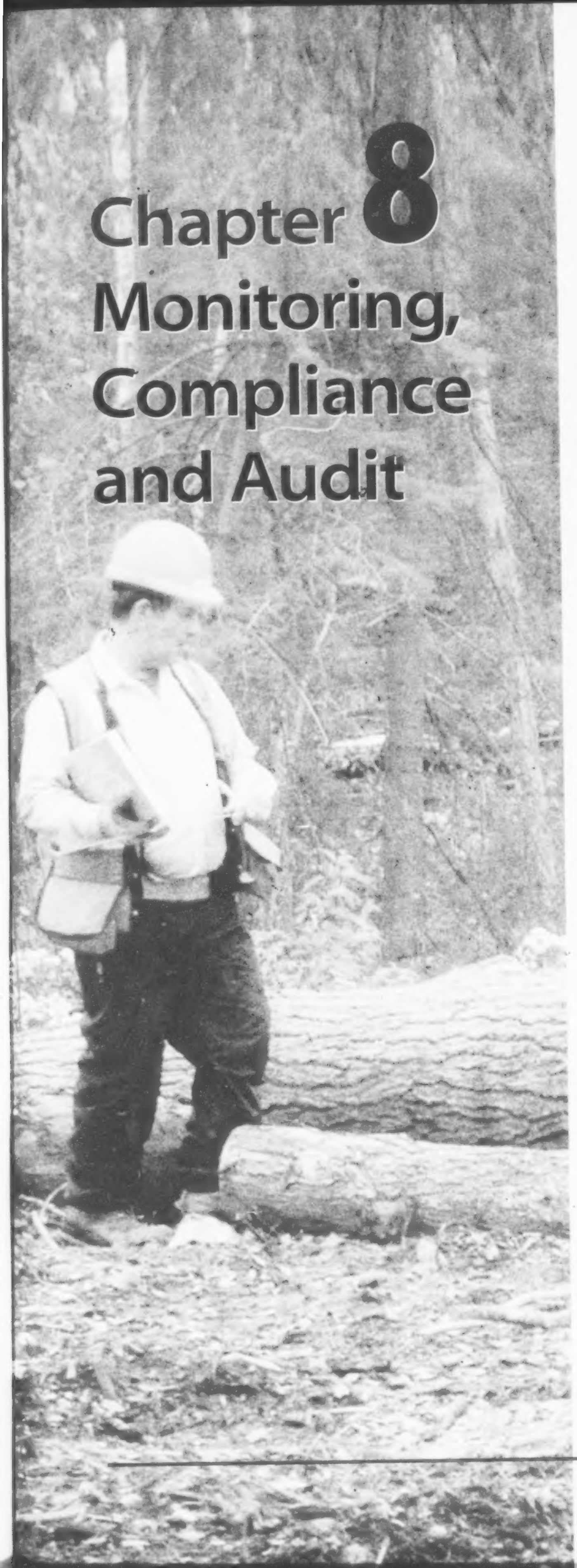
In 2002/03, some adjustments to renewal rates occurred on individual management units to reflect the local costs of renewing and tending various species and to reduce specific accumulated surpluses in individual Renewal Trust Fund accounts. These rates will continue to be reviewed and adjusted annually to ensure that adequate levels of funding are maintained. A complete listing of the 2002/03 renewal rates for each management unit is provided in Appendix 5.

Table 7c Provincial forest renewal expenditures, 2002/03

Source	**Expenditure (million $)**
Forest Renewal Trust Fund	$88.5
Forestry Futures Trust Fund	$8.6[1]
Special Purpose Account	$0.5
Direct MNR Expenditures	$0.6
Total Renewal Expenditures	**$98,3**

[1] For 2002/03 this amount includes only project disbursements. In annual reports prior to 2001/02, other disbursements (for Independent Forest Audits, Forest Resources Inventories, and conversion charges) were included in the reported total.

Chapter 8
Monitoring, Compliance and Audit



Forest management and operations in Ontario are monitored and audited to assess compliance and evaluate progress and results. The three types of monitoring used are effectiveness, effects, and compliance. The information collected and analyzed for effectiveness monitoring determines how well the forest is growing. Effects monitoring assesses the impacts of operations on various aspects of the forest ecosystem through long-term studies. This type of monitoring is reported in Chapter 10. Compliance monitoring is conducted to ensure that the MNR and the forest industry carry out operations according to plans, regulations, and the required standards.

Forest Management is also audited through Independent Forest Audits, providing independent published audits of management units across the province. Forest certification, a separate but related process, is a voluntary market-oriented means of promoting sustainable forest management, in which an independent third party evaluates forest management systems according to certain pre-established certification requirements or standards.

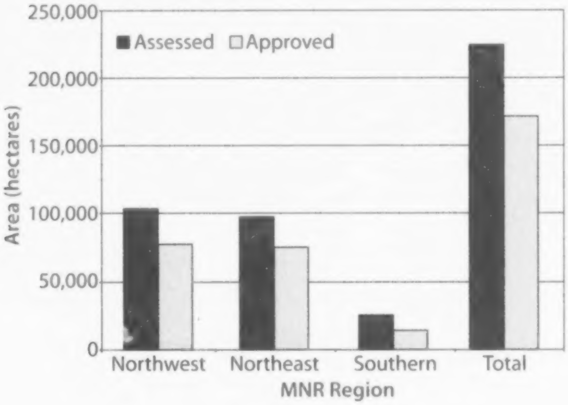
Silvicultural Effectiveness Monitoring

Harvest and renewal activities are reported annually for the year they are implemented. Determination of the success of these activities in regenerating the forest occurs by specific assessment methods, conducted a number of years (usually 5 to 15 years) after regeneration treatments are completed.

Free-To-Grow (FTG) assessments are an effectiveness monitoring tool that provides an indication of the success of silvicultural treatments, and information to project the future forest condition. These assessments involve a variety of techniques, including field measurement of trees on sample areas of the forest, aerial surveys, and remote sensing. Some forest managers conduct these surveys annually, while others prefer to accumulate larger blocks that they assess once every few years. This has resulted in a backlog of areas needing assessment. The Forest Renewal Trust Fund now provides funding for these surveys on Sustainable Forest Licence (SFL) areas, and many forest companies are now assessing both their scheduled areas and the backlog areas.

Figure 8a summarizes the areas assessed and those that were declared FTG for 2002/03 by MNR region for the 41 management units that reported. Of the total 225,000 hectares assessed for FTG, 172, 000 hectares (77 percent) was approved as having achieved the FTG standard within a set time period. This result varies by MNR region, from 82,000 hectares (78 percent) in the Northwest Region and 77,000 hectares (79 percent) in the Northeast Region to 13,000 hectares (59 percent) in the Southern Region.

Figure 8a Summary of area declared free-to-grow by MNR region, 2002/03.



A summary of the area assessed and approved as FTG for the period 1998/99-2002/03 is presented in Figure 8b. After two years (1999/00 and 2000/01) of continual decline in area assessed and approved as FTG, there was an increase in the provincial area declared FTG in 2001/02. Results for 2002/03 were very similar to those of 2001/02. In 2002/03 the overall area assessed was down slightly from 2001/02, while the area approved as FTG increased slightly from 165,000 hectares in 2001/02 to 172,000 hectares in 2002/03. The overall area assessed and approved as FTG is still substantially less than the numbers reported in 1997/98 and 1998/99.

The percentage of assessed area that was declared FTG increased five percentage points in 2002/03 (Figure 8c). In 2002/03 both Southern and Northwest Regions reported an increase in both the area assessed and reported as FTG. Conversely, Northeast region reported a decline in these numbers; however, there was an improvement of 8.5 percentage points in the percentage approved as FTG. The percentage approved as FTG in the Southern region showed the first real improvement since 2000/01, up to 59%, but this is still substantially less than the two northern regions which reported percentages of 78 and 79% assessed area declared FTG.

Regenerating areas being reported in 2002/03 were harvested and treated several years ago (typically five - 15 years), prior to the implementation of the *Crown Forest Sustainability Act* (CFSA) and the associated Forest Renewal Trust and Forestry Futures Trust Funds. Improvements in the renewal success rates should be apparent in future reports because of these legislative and funding changes for the province. Support from the Forestry Futures Trust and the Forest Renewal Trust Funds provide the funding for forest managers to ensure that harvested areas have the necessary treatments to achieve successful renewal. All harvested areas must be renewed successfully. Some of the areas found not FTG at this time need re-treatment, and others require tending (i.e. to suppress undesirable competing vegetation such as brush and grass). Other areas simply require the passage of more time to allow for the incremental growth necessary to meet the height standard for FTG.

Figure 8b Summary of area declared free-to-grow by fiscal year.

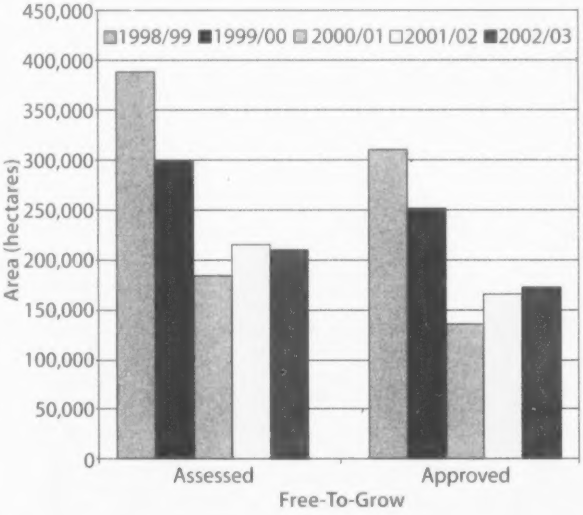
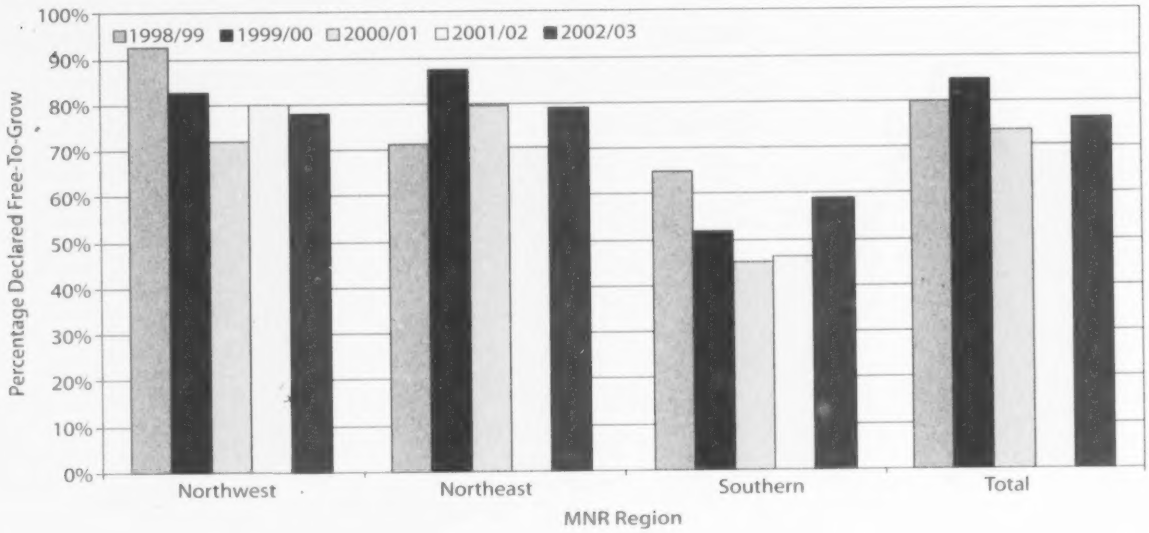


Figure 8c Percent assessed area declared free-to-grow by MNR region.



Compliance Monitoring

The forest operations compliance monitoring system in Ontario is designed to ensure the MNR and forest industry conduct forest operations in compliance with legislation and according to approved plans (e.g. forest management, fire, compliance) and operational standards.

At the management unit level, compliance inspection reports are prepared for harvest, access, renewal, protection and maintenance operations. These reports help managers focus on activities that may require immediate attention, supply a database for identifying provincial trends, and provide feedback for compliance program adjustment.

Fiscal year 2002/03 is the fifth year where the MNR's regulatory role is one of monitoring/auditing, conducting "spot-checks" of industry activity, investigation, and enforcement. The Sustainable Forest Licence holders (SFLs) have lead responsibility for conducting a comprehensive forest operations compliance program as a condition of their licence. The program includes planning, monitoring, inspection, reporting, training and education. On the few management units where the MNR still conducts forest operations, the MNR remains directly responsible for delivering all aspects of the compliance program.

It is mandatory for all MNR forest compliance inspection staff to use the Forest Operations Compliance Information System (FOCIS) to complete inspections of Crown units and any spot-checks or audits of SFLs. All inspections must also be submitted to the provincial database, known as the Compliance Information System. The forest industry completes and submits reports according to technical standards and requirements of the *Forest Information Manual*. In 2002/03 all forest industry companies used the FOCIS application for electronic reporting.

This annual report summarizes data collected across the province from a standard electronic format for inspection reporting. Interpreting the data collected through FOCIS and the Compliance Information System requires experience and understanding of the systems and the functions as carried out through the MNR and forest industry partnership.

The forest industry (SFL holder) as part of "industry self-monitoring and reporting" is required to report all incidents of non-compliance on their management unit to the MNR. This includes infractions incurred by the SFL, overlapping licensees, shareholders and any private individual who contravenes the CFSA. Incidents related to the latter are not recorded against the SFL i.e., they are deemed as "non

SFL related". The SFL does not have responsibility for assessing the significance of non-compliance. This is strictly an MNR responsibility as the regulatory agency.

The MNR's regulatory role, with respect to forest operations compliance, includes the verification of all instances of non-compliance as reported by companies. Therefore for each report of non-compliance by industry, there will also be at least one MNR inspection report confirming the industry report. For incidents assessed as moderate or significant, the MNR will actively monitor the non-compliance until it is resolved. This action may result in additional reports of non-compliance by the MNR for the same occurrence. In addition, the MNR undertakes random as well as planned spot-checks and audits of forest operations. This may result in additional reports of non-compliance which may not have been reported by a company, due to a difference in interpretation between industry and the MNR. In some cases, especially those of a minor nature, industry may remedy the situation and deem the infraction too minor to report. Some companies may record an incident as "in Compliance With Comments". This category recognizes that a minor situation is present, generally correctable, and with some room for improvement in operational practices.

In summary, fundamental differences between the MNR audit and verification role and the industry inspection role will lead to differences in non-compliance reported by the MNR and industry, with the percentage of MNR non-compliance reports tending to be higher. Proposed changes to the reporting system in the near future will separate multiple and duplicative reporting of MNR and industry reports on the same operation.

On-going training of all field inspectors will narrow the gap in compliance interpretation. A compliance inspector competency certification program for all MNR and forest industry inspectors was initiated in 2001, to improve overall skills and competencies in compliance assessment and reporting, and to enhance standardization. In 2002/03, 130 forest sector and MNR inspectors were certified. This competency certification will continue until all forest operations compliance inspectors become certified.

Results of both industry and MNR compliance inspections are summarized in Table 8a. For comparison purposes, Table 8a also has rows at the bottom that list the 1998/99 to 2001/02 report summaries.

The forest sector has clearly taken a lead role in compliance inspection and reporting as per the requirements of holding an SFL. Overall, inspection of forest operations is at an all time high, especially in the major operations related to harvest and access. The compliance rate as reported by the forest sector has remained relatively constant at about 95%. The 5% non-compliance rate relates primarily to minor infractions, and can be considered acceptable given the magnitude of inspections and total area under operations across all management units. The MNR focused its auditing and spot-checking on those operations having the greatest potential for impact on the environment and sustainability of the forest.

Joint Inspections/Exchange

Of the total 9,309 inspection reports undertaken across the province, 936 were conducted jointly between MNR and company staff. Joint inspections are encouraged where interpretation issues require resolution, to establish consistency in observations and reporting, to maintain good communications, and to calibrate operational compliance. It is a requirement that all "in-compliance" inspection reports be exchanged between MNR and SFLs within 10 working days of the inspection report completion. In cases of non-compliance, industry must electronically report these situations within five working days. If the violation is potentially significant, it must be reported within 24 hours of the discovery of the violation. Similarly, the MNR must advise the SFL of any violations that it detects within the same time periods and via electronic report submission.

Road Washouts

Appendix 20 of the Timber Class EA approval requires the MNR to report annually on road washouts. Compliance inspections of water crossings conducted throughout 2002/03 indicate that forest companies reported 30 washouts. Twelve additional washouts

Table 8a Forest operations compliance inspection reports summary, 2002/03

	INDUSTRY			MNR					
							Significance of Non-Compliant Reports		
Operation Type	Total # Reports	Total # Compliant Reports	Total # Non-Compliant Reports	Total Audits, Checks, Verifications	Total # Compliant Reports	Total # Non-Compliant Reports	Minor	Moderate	Significant
Access	1792	1686	106	562	424	138	105	23	10
Harvest	4530	4276	254	1201	963	238	183	45	10
Renewal	851	839	12	79	70	9	8	0	1
Maintenance	277	268	9	9	9	0	0	0	0
Protection	5	5	0	3	3	0	0	0	0
TOTAL REPORTS									
2002/03*	**7455**	**7074**	**381**	**1854**	**1469**	**385**	**296**	**68**	**21**
2001/02	6753	6399	354	2117	1621	496	355	109	32
2000/01	6161	5877	284	2280	1797	483	336	121	26
1999/00	4859	4538	321	2298	1733	565	388	124	53
1998/99	3166	2904	262	2440	1906	534	383	111	40

Note: The data for each operation type should not be examined in isolation due to the interrelated nature of activities. An inspection is comprehensive in terms of its ability to examine all related activities or sub-activities within the operation. Protection (e.g. fire inspections) is an activity within each main operation type.

**Provincial Compliance Information System, January 31, 2005*

were identified by the MNR for a combined total of 42. Washouts can occur due to a number of factors, including natural causes such as spring flooding, heavy and/or prolonged rains, blockage due to beaver activity, and poor road construction techniques.

Actions Taken

In the self-monitoring and reporting compliance partnership model, industry must report non-compliance situations, and the MNR verifies, assesses the significance, and determines the appropriate remedy and enforcement action if any is required.

In many instances of minor non-compliance, immediate remedial action is undertaken and enforcement measures are not warranted. While the CFSA remedy and enforcement provisions apply largely to licensees of the Crown, any person who contravenes the CFSA may be charged. A total of 11 offence charges were laid under the CFSA against individuals who were unlawfully harvesting forest resources in a Crown forest (see Table 8b).

Although all incidents of non-compliance are reported in the fiscal year in which they occurred, a number of cases are ongoing (under investigation or subject to court action) in terms of remedy and enforcement action. These will be recorded when resolved.

Table 8b Remedy and enforcement action taken, 2002/03

Method	Count	Fine
Administrative Penalty[a]	47	$140,278.85
Offence Charge[b]	11	$49,932.85
Stop Work Order	4	n/a
Repair Order	14	n/a
Compliance Order	17	n/a
Warnings	84	n/a
Total Actions Taken 2002/03	**177**	**$190,211.70**
Investigations (no charges warranted)	15	n/a
Total Actions Taken 2001/02	113	$121,069.44
Total Actions Taken 2000/01	156	$292,595.77
Total Actions Taken 1999/00	145	$234,019.18
Total Actions Taken 1998/99	131	$206,665.97

[a] To Forestry Futures Trust Fund

[b] To Consolidated Revenue Fund (general revenue)

Source: CAVRS (Compliance Activity and Violation Reporting System) / OTAR (Ontario Timber Accounts Receivable) January 31, 2005

Program Review

As part of its continuous improvement philosophy the MNR initiated a second compliance program review in 2001/02. This was undertaken as a follow up on progress in meeting the recommendations of a 1999 program review, and to address the status of the compliance program today . This review determined that, in general, the relatively new forest operations compliance program is functioning reasonably well. Room for improvement exists in specific activities such as compliance planning, inspection reporting, risk assessment and communications, in both the MNR and the forest industry.

This latest review revealed a reduction in the previous variability of both the MNR's and the SFLs' understanding and delivery of their respective roles and responsibilities associated with the forest operations compliance program. Voluntarily taking remedial action for minor incidents and tracking progress are areas where significant improvements were observed. The new Compliance Certification training has been positively received, and its continuation will improve all aspects of the field delivery of the compliance program. An additional period of time (e.g. one to two years), and a very concerted effort in implementing the reported findings should resolve most of the shortcomings encountered.

Independent Forest Audits

Independent Forest Audits are a requirement of the CFSA, T & C #86 and T & C #87 of the Timber Class EA approval, and are a condition of SFLs. All management units, both Crown and SFL, are audited at least once every five years to review actual operations and examine the forest management activities carried out over the previous five years.

The audit is a systematic and documented verification process to assess adherence to the forest management plan and the planning process. Assessing the interpretation and application of provincial legislation, manuals, policies, and guidelines at the management unit level is also part of the audit. Auditors examine the effectiveness in achieving the planned objectives and provide an assessment of forest sustainability for the management unit. Audit teams review licensee compliance with the obligations of their specific SFL.

In order to address the audit purpose and objectives, the audit process and protocol document sets out the forest management principles, criteria, and procedures for undertaking Independent Forest Audits. The audit protocol identifies eight guiding principles, identified by the following titles: commitment, public participation, forest management planning, plan implementation, systems support, monitoring, achievement of management objectives and forest sustainability, and contractual compliance. For each principle, a series of specific criteria are identified that, when met, will result in achievement of the principle.

The audit terms of reference are the same for all Independent Forest Audits, including the audit team personnel requirements. Each audit team consists of a lead auditor who is trained in auditing procedures, has current auditing experience, and is supported by an audit team. The audit team consists of a minimum of two persons with experience in forest management planning and forest operations, an individual trained in forest ecology or wildlife biology, and a minimum of one person with experience in assessing socio-economic information, public consultation processes, and First Nations involvement in forest management planning. All members of an audit team must have a minimum of seven years recent and relevant experience in forest types similar to those being audited. Also, they must be independent of the operations they audit as well as free from conflict of interest throughout the process. The audit team must include a Registered Professional Forester. For the 2002 audits, the audit team was required to provide an audit against the requirements that were in effect during the audit period and prepare the subsequent report for publication.

Action plans must be developed in response to each audit report. The SFL holder and the applicable MNR district jointly develop the action plan. For each recommendation in the audit report, the action plan must state the required action, the organization and individual responsible for the work, deadline dates, and a method of tracking the progress of the action plan. A status report on the action plan is required two years after its approval to ensure that progress is occurring as specified in the plan. The Independent Forest Audit reports are tabled in the legislature and are available upon request.

Summary of the 2002 Independent Forest Audits

The 2002 Independent Forest Audits were undertaken on 10 forest management units and resulted in the preparation of 9 audit reports (see Figure 8d). Two management units were amalgamated on April 1, 2002 and therefore were combined into one audit report. Five of the management units were managed via Sustainable Forest Licences throughout the five-year audit period. The Algonquin Forestry Authority managed one unit during the period, under an SFL-like agreement, and three were in transition, which resulted in a mix of Crown and SFL management during the period. External consultants, independent of the licensees and the Ministry, carried out the audits. Table 8c provides a complete listing of the 2002 audit reports by forest manager and independent auditor.

Seven of the nine 2002 audit reports concluded that the forests were generally managed in compliance with legislation and policy, with licence requirements, and with principles of sustainable forest management during the term of the audit (Table 8d). Two concluded that the sustainability of the forests could not be determined. These latter two audits (Nagagami and Romeo Malette) concluded that due to information deficiencies, the auditor could not determine conclusively whether or not the forest was being sustainably managed. In addition, these two reports recommended that the SFL be approved for a 15-year term instead of the normal 20-year term.

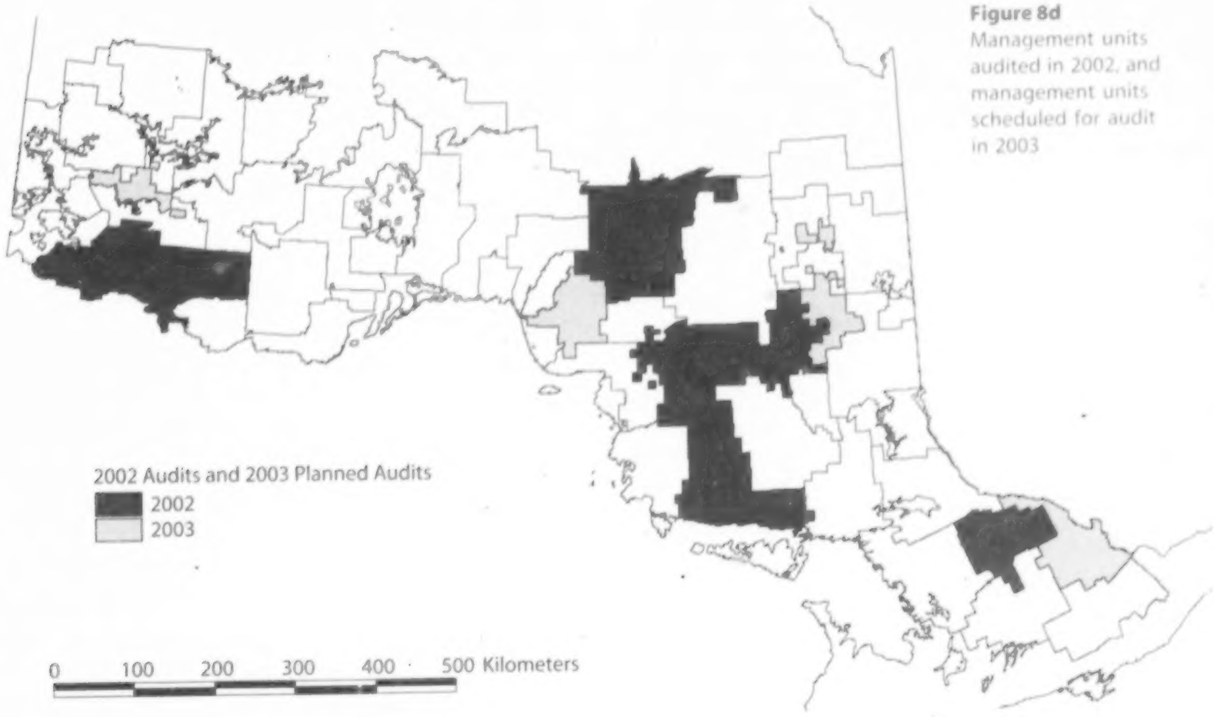


Figure 8d
Management units audited in 2002, and management units scheduled for audit in 2003

Table 8c 2002 Independent Forest Audits

Report/Forest(s)	*Licensee/Forest Manager*	*Independent Auditor*
Algonquin Park	Algonquin Forestry Authority	KBM Forestry Consultants Inc.
Crossroute Forest	Abitibi-Consolidated Company of Canada & MNR Fort Frances District	David Barker and Associates Ltd.
Hearst Forest	Hearst Forest Management Inc.	BioForest Technologies Ltd.
Nagagami Forest	Abitibi-Consolidated Company of Canada	BioForest Technologies Ltd.
Northshore Forest	Northshore Forest Inc. & MNR Sudbury and Sault Ste. Marie Districts	KBM Forestry Consultants Inc.
Pineland-Martel Forest	Domtar Inc. & Pineland Timber Company Ltd.	ArborVitae Environmental Services Ltd.
Romeo Malette Forest	Tembec Industries Inc.	ArborVitae Environmental Services Ltd.
Sapawe Forest	Atikokan Forest Products Limited & MNR Fort Frances District	David Barker and Associates Ltd.
Superior Forest	Weyerhaeuser Company Ltd.	ArborVitae Environmental Services Ltd.

Table 8d Independent Forest Audit results for 2002 audits

Management Unit	In Compliance[1]	Sustainably Managed	SFL Extension Recommended[2]
Algonquin Park	yes	yes	yes
Crossroute Forest	yes	yes	yes
Hearst Forest	yes	yes	yes
Nagagami Forest	no	inconclusive	no
Northshore Forest	yes	yes	yes
Pineland-Martel Forest	yes	yes	yes
Romeo Malette Forest	no	inconclusive	no
Sapawe Forest	yes	yes	yes
Superior Forest	yes[3]	yes	yes

[1] Managed in compliance with legislation and policies that were in effect during the audit period

[2] This column is only applicable to management units managed under a Sustainable Forest Licence

[3] The audit report indicated that with the exception of the company's handling of its annual reporting obligations, the Forest was managed in compliance with laws, licences and FMPs.

The Algonquin Park Forest audit report indicated that management of the unit generally conformed to existing program direction and legislation, during the five-year period ending March 31, 2002. Further, the report indicated that the forest was managed effectively and in a manner consistent with accepted criteria of forest sustainability.

The audit report identified 12 recommendations for improvement and two best practices relative to the management of the Forest. The audit report recommended that:

- the MNR undertake a review and assessment of the capacity and resources of Algonquin Park required for fulfilling its forest management mandate, and address deficiencies where found;
- the local citizens committee (LCC) should meet more frequently between planning periods;
- the Algonquin Forestry Authority develop a strategy to return forest areas previously strip cut to a natural condition;
- Algonquin Park must make improvements to cultural heritage values and methods to ensure their protection;
- Algonquin Park and the Algonquin Forestry Authority must enhance the collection of information about moose aquatic feeding areas, as well as heron and osprey nesting sites;
- the Park lead a review of the existing 1975 road strategy to ensure that it protects Park values while accommodating efficient forest management;

- the Algonquin Forestry Authority must ensure compliance with all requirements for management of aggregate pits;
- the Algonquin Forestry Authority and Algonquin Park compliance inspectors must provide accurate location information in Forest Operations Inspection Reports when follow-up action is required;
- Algonquin Park must prepare and implement a 5-year Compliance Plan (2000-05) and an Annual Compliance Operations Plan (2003-04) in a timely manner; and
- the Algonquin Forestry Authority must re-examine three recommendations from the 1997 Independent Forest Audit and ensure that appropriate follow-up occurs.

The Algonquin Forestry Authority is commended for the best practice of phasing out culverts at stream crossings in favour of portable bridges. The audit team also commends the Algonquin Forestry Authority for its recognition of the value of training to accomplish the objectives of sustainable forest management.

Extension of the forest management agreement was recommended.

The Crossroute Forest audit report indicated that the MNR and Abitibi Consolidated Company of Canada complied in all significant respects with applicable acts, government policies, management plans and other requirements during the 5-year audit period ending March 31, 2002.

The audit report identified one recommendation for improvement: that the MNR should review the current system of Silvicultural Ground Rules and Forest Operations Prescriptions, and either re-train field and licensee staff in its proper use, or design an alternate system for tracking silvicultural progress.

The audit report identified two best management practices. Abitibi Consolidated Company of Canada is commended for their diligence and sensitivity regarding user needs, concern for public safety and for advising the public about repairs to roads destroyed by floods in June 2002.

The auditor expressed the opinion that the forest was being managed in a sustainable manner and licence renewal was recommended.

The Hearst Forest audit report indicated that management of the Forest met the requirements of law and policy during the five-year audit period ending March 31, 2002. In general the audit team found the Forest to be well managed, and concluded that it will be sustainable into the foreseeable future.

The audit report identified 23 recommendations for improvement. Specifically, Hearst Forest Management Inc. should:

- require that all parties operating on the Forest honour its sustainable forest management policies;
- ensure that the Forest Resource Inventory is accurate and up to date;
- improve planning for reserves around hawk and falcon stick nests;
- clearly identify Areas of Concern in planning documentation;
- include non-timber compliance observations in the Forest Operations Compliance Information System, preferably with additional maps and photos;
- ensure that Careful Logging Around Advanced Growth and Group Seed Tree renewal prescriptions on transitional or upland sites are correctly applied and recorded;
- investigate the loss of productive land and potential wood supply due to grubbing during road construction, and install appropriate signage on roads;
- submit compliance inspection reports on time;
- examine its methodology for conducting Free-to-Grow surveys;
- improve its monitoring efforts on naturally regenerating stands; and
- rationalize discrepancies in Annual Reports, the Report of Past Forest Operations and the trend analysis.

In addition, the auditors recommended that the MNR should:

- complete the inventory of culverts and bridges and, together with Hearst Forest Management Inc., must ensure the adequacy of procedures to deal with cross drainage; and
- develop jointly with Hearst Forest Management Inc. a comprehensive solution to the manage-

ment of unused aspen volumes at roadside. If low-grade aspen cannot be utilized, the audit team recommends that hardwood regeneration be the subject of increased monitoring by Hearst Forest Management Inc..

The auditors also identified two best management practices. An example was the innovative and effective approach taken by the Hearst Forest Management Inc. and the MNR District office to enhance the public consultation process.

The report recommended that the new SFL, which will replace the existing SFL for the Hearst Forest, be granted for a full 20-year term. The SFL should include provisions to ensure that memoranda of agreement will be developed between the SFL holder and the commitment holders to achieve effective wood utilization.

The Nagagami Forest audit report for the five-year period ending March 31, 2002, stated that "... the audit team discovered a forest that is not performing satisfactorily and requires considerable effort in several areas to correct a number of significant deficiencies ...". The auditor attributed many of the deficiencies to inattentiveness by Abitibi Consolidated Company of Canada and the MNR in meeting reporting and compliance monitoring requirements, and to inadequate resources and corporate support to meet obligations. Due to information deficiencies, the auditor could not determine conclusively whether or not the Forest was being sustainably managed.

The audit report identified 32 recommendations including:

- improvement of LCC functioning, through the MNR increasing the diversity of perspectives represented on the Committee, and providing additional training for members;
- enhancement of the documentation related to planning, and reporting related to term and condition 77 and communication with First Nations communities;
- improvement of the collection of fisheries and caribou values data;
- utilization of improved socioeconomic information relating to remote-tourism and other non-industrial forest uses;
- confirmation that aerial spray buffer widths satisfy Ministry of the Environment regulations;
- avoidance of silvicultural prescriptions which are not recognized in the provincial guides unless clearly documented in the forest management plan (FMP) as exceptions, and ensure that their use is appropriately monitored;
- confirmation that water crossings meet legislation and guidelines, by requiring that: Abitibi Consolidated Company of Canada staff and contractors receive adequate training; all crossings installed in 1997-02 are assessed; and new crossings installed in fiscal 2003-04 are inspected;
- provision of adequate training to Abitibi Consolidated Company of Canada and MNR staff and contractors regarding snag management and minimizing site disturbance;
- improvement by the SFL holder in its management of un-utilized timber and of roadside slash accumulations, and increased effort to reduce or eliminate two-pass harvesting;
- Abitibi Consolidated Company of Canada shall report natural renewal treatments and FTG survey activity in the appropriate annual reports, without delay;
- employment of more intensive free-growing survey methodologies;
- reconciliation by the MNR of the stumpage accounts for the Forest; and
- revision of the 1997 action plan status report to ensure that incomplete items from that audit are properly actioned.

In addition, several improvements to compliance monitoring should be made by Abitibi Consolidated Company of Canada and the MNR including:

- adequate training of appropriate staff;
- proper follow-up actions;
- regular meetings to discuss issues and enhance education;
- joint field inspections; and
- meeting reporting requirements.

Finally, to eliminate a long-standing problem, both quality and timeliness of annual report submissions must be improved. The incomplete Report of Past Forest Operations for the 1992-97 planning term should be revised to an acceptable quality.

The report recommended that the new SFL for the Nagagami Forest, which was recently signed in 2003, be approved for a licence term of only 15 years. The term of this newly-signed SFL currently includes a clause that it be issued for a 20-year term subject to the Minister being satisfied that the licensee has complied with the terms and conditions of the licence based on the results of the audit for the period 1997-2002.

The Northshore Forest audit report indicated that forest management activities on the Forest generally complied with existing program and legislation during the five-year period ending March 31, 2002.

The audit report identified 8 recommendations for improvement including:

- Northshore Forest Inc. must ensure in the 2005 FMP that access planning recognizes the different road classifications based on anticipated use and other criteria developed by the planning team in consultation with the LCC and Resource Management Advisory Committee;
- the MNR and Northshore Forest Inc. must rigorously apply all means at their disposal to immediately stop forest operations on the Northshore Forest that are consistently not in compliance with the law, regulations and guidelines;
- the MNR must provide the Term and Condition 77 annual report in sufficient time to allow for inclusion in the SFL Annual Report; and
- Northshore Forest Inc. must increase its Free-to-Grow surveys so that barren and scattered/not satisfactorily regenerated stands and cumulative depletions do not exceed 35,000 ha by 2007.

Also, the MNR and Northshore Forest Inc. must ensure that the following improvements are made in the planning process for the next (2005) FMP:

- all First Nations notice requirements need to be met and documented;
- the planning team must be established in a timely manner;
- the correct land base should be used in both forest management planning and modeling; and
- the Natural Resources Values Information System data must be up-to-date and accurate.

The auditors identified 3 best management practices, including Northshore Forest Inc.'s use of the Internet to post planned forest management activities as an innovative means of distributing planning information to the public.

The auditors found that the Northshore Forest was managed sustainably, and licence renewal was recommended.

The Pineland-Martel Forest audit report indicated that management of the Forest was in compliance with the laws, licences and FMPs in effect during the five-year period ending March 31, 2002. Management was consistent with the general principles of sustainable forest management.

The audit report identified 17 recommendations for improvement and three best practices relative to the management of the Forest. The report recommended that:

- the MNR should continue its liaison and relationship-building efforts with First Nations;
- the MNR should provide accurate and timely values information for use in forest management, and local MNR staff need to have enough field time to ensure accurate knowledge of local forest conditions;
- to improve the quality of operations, Domtar Inc. should reduce soil disturbance during site preparation, and implement a program to reduce the occurrence of rutting;
- the MNR should recognize slash pile burning as a separate lower-risk class of prescribed burn and streamline the review and approval process;
- Domtar Inc. should implement efforts to reduce cross drainage problems on tertiary roads. Additionally Domtar Inc. should investigate the feasibility of site preparing and planting abandoned roads; and
- Domtar Inc. and the MNR should plan and conduct a target number of joint inspections each year.

In addition, the MNR should improve its forest compliance program by:

- preparing annual compliance operations plans;

- including target numbers of inspections to be performed;
- assigning appropriate staff for field inspections;
- achieving inspection targets; and
- accurately reporting the number of compliance inspections in annual reports.

Finally, the auditor recognized Domtar Inc.'s development and continued refinement of an innovative silvicultural treatment for mixed-wood stands as a best practice. To further advance the management of mixed-woods, the auditor also recommended the following improvements: Domtar Inc. should develop a strategy for the management of mixed-woods; and, the MNR and the industry should develop a set of principles for setting hardwood renewal rates.

The auditor recommended that the new SFL for this Forest, which will replace the existing SFL, be issued for a 20-year term.

The Romeo Malette Forest audit report indicated that the auditor was unable to determine whether or not the Forest was being managed sustainably during the five-year period ending March 31, 2002.

The audit report identified 16 recommendations for improvement and three best practices relative to the management of the Forest. Specifically, the report recommended that within one year of the date of submission of the final audit report Tembec Inc. (the SFL holder):

- must prepare a plan to re-inventory the Forest, so that the Forest Resource Inventory to be used for the preparation of the 2012 FMP meets the requirements of the Forest Information Manual;
- should develop a strategy for the management of mixed-woods, for implementation during the current plan period; and
- should undertake pre-harvest inspections of sites where natural regeneration is the prescribed treatment.

In addition the report recommended that:

- the MNR should ensure that Grant Forest Products is given the opportunity to be represented on the planning team for the Romeo Malette Forest 2007 FMP;
- Tembec Inc. must complete surveys on the barren and scattered, not-sufficiently-regenerated, and depleted areas that are considered backlog as of 2004. These surveys must be sufficient to provide updated information on the FTG status for all stands and provide proper stand descriptions for areas classified as FTG. The information must be incorporated into the forest inventory and used in the preparation of the 2007 FMP;
- the MNR should conduct stick nest surveys more frequently;
- Tembec Inc. should extend the scope of its slash management program, improve thinning of jack pine, and review the effectiveness of tending by aerial spraying;
- Tembec Inc.'s Forest Operations Compliance Information System reports should include more comprehensive written descriptions, photos and maps showing the area of inspection;
- the Ministry should organize a review of Forest Operations Compliance Information System training, reporting, terminology, and the use of associated hardware and software;
- Tembec Inc. should check the data contained in Annual Reports and the Report of Past Forest Operations, and revise them as required; and
- Tembec Inc. should endeavour to improve growth and yield estimates.

Finally, the report noted that a significant deemed SFL contractual obligation had not been met with respect to B&S and NSR lands. The next audit for the Forest should be in 2005, and should pay particular attention to the state of the forest inventory and the disposition of B&S/NSR/depleted lands.

The report recommended that the new SFL, which was recently signed in 2003, be approved for a licence term of only 15 years. The term of this newly-signed SFL currently includes a clause that it be issued for a 20-year term subject to the Minister being satisfied that the licensee has complied with the terms and conditions of the licence based on the results of the audit for the period 1997-2002. It was also recommended that an interval of only three years should pass before the next audit of this Forest, and that, during that next audit it should be possible to make a conclusion regarding sustainability, and a recommendation regarding licence extension.

The Sapawe Forest audit report indicated that the Forest was well managed. The auditor concluded that Atikokan Forest Products Ltd. and the MNR complied in all significant respects with applicable acts, regulations, government policies, FMPs and other requirements in effect during the five-year period ending March 31, 2002.

The audit report identified two recommendations for improvement including:

- corporate MNR should review the current system of Silvicultural Ground Rules and Forest Operations Prescriptions, and either re-train field and licensee staff in its use, or design an alternate system for tracking silvicultural progress; and
- Atikokan Forest Products Ltd. or the MNR should inspect naturally abandoned roads.

Additionally, the report identified two best management practices. An example of a best practice is the effort made by Atikokan Forest Products Ltd. and the MNR to protect visual quality near a major tourism area, and to thereby enhance public trust in forest management.

It was the auditor's opinion that the Sapawe Forest was managed in a sustainable manner, and licence renewal was recommended.

The Superior Forest audit report indicated that with the exception of the company's handling of its annual reporting obligations, the Forest was managed in compliance with laws, licences and FMPs in effect during the 5-year period ending March 31, 2002. The auditors found that management of the Superior Forest was consistent with the general principles of sustainable forest management. However, the audit team also recommended that the company review some of its intentions for management of the ecological aspects of the forest, to ensure that it will remain sustainable.

The audit report identified 30 recommendations for improvement. Specifically, the report recommended that:

- the MNR ensure consistent and continuing support for communications with First Nations' communities so that effectiveness might be enhanced;
- to support the Forest Management Planning process, the MNR should assess the strategy of managing marten habitat using 60-year deferrals for core habitat;
- Weyerhaeuser Inc. and the MNR continue to pursue a better working relationship prior to development of the next FMP;
- the MNR provide accurate and timely non-timber values information, and to co-ordinate the effort and analyses of monitoring exceptions to the osprey guideline;
- the MNR ensure that consistent messages are provided by various Ministry personnel in the FMP development process;
- the company and the MNR develop procedures to document approval of critical FMP components, and recognize achievement of key planning milestones;
- to strengthen the implementation of its operations, Weyerhaeuser Inc. should improve thinning and jack pine seeding;
- culvert installations, cross drainage on tertiary roads and access controls should be improved;
- the MNR prepare Annual Compliance Operations Plans and comply with Forest Operations Inspections Reports data submission requirements and deadlines;
- Weyerhaeuser Inc. and the MNR calibrate their understanding of some types of non-compliance to improve consistency in reporting; and
- annual reports be submitted and reviewed on time.

In addition, for the next (2006) FMP, the following improvements were recommended:

- the planning team needs to give a strong justification for its approach of converting mixed-wood areas to "pure species", or to substantially reduce the extent of planned mixed-wood conversion;
- a long-term strategy for red and white pine management should be included; and

- the team should assess and document the ecological implications of the modest 2001 old-growth objectives and of the failure to meet some specified habitat requirements and objectives in the 2001 FMP.

The development of a "Relationship Building Communications Protocol" for First Nations was considered a best practice by the auditor.

The audit recommended that the recently issued SFL be granted for a full 20-year term. This SFL currently includes a clause that it be issued for a 20-year term subject to the Minister being satisfied that the licensee has complied with the terms and conditions of the licence based on the results of the audit for the period 1997-2002.

Summary of 1998- 2002 Audit Reports

With the completion of the 2001 audits all management units had been audited at least once and five had been audited twice. Following the completion of the 2002 audits the program is in the second year of its second cycle of independent forest audits. Table 8e summarizes the audit results from 61 audit reports completed over a 5-year period from 1998 to 2002. During this 5-year period 49 reports indicate that the majority (80%) of Management Units were managed in accordance with legislative and policy requirements that were in effect during the audit term. A further 8 reports (13%) were generally managed in compliance with legislative and policy requirements with the auditor noting significant exceptions or conditions. Only 4 of the reports (7%) reached a wholly negative conclusion with respect to compliance with the requirements. The audit program is therefore serving its purpose. Audit reports identify areas for improvement, and the MNR and SFL holders continue to respond by putting solutions in place. These solutions are documented in mandatory action plans that are developed subsequent to the completion of audit reports.

Future Program

There are 6 Independent Forest Audits planned for 2003: Driftwood Forest, Dryden Forest, Ottawa Valley Forest, Timmins Forest, Timmins Management Unit and White River Forest (see Figure 8d). The results of these audits will be published upon completion. All of these Forests are being audited for a second time under the Independent Forest Audit Program.

Table 8e Five-year summary of audit reports

Audit Year	Number of Audit Reports	In Compliance[1]	In Compliance with Conditions or Significant Exceptions	Not in Compliance	Forest Manager			SFL Extension Recommended[2] (Crown Units not Eligible)
					Crown	Transition	SFL	
1998	6	6	–	–	3	–	3	3
1999	11	8	2	1	2	4	5	9[4]
2000	16	11	5	–	3	3	10	13[5]
2001	19	18	–	1	4	9	6	15
2002	9	6	1	2	–	3	6[3]	7
Total	**61**[6]	**49**	**8**	**4**	**12**	**19**	**30**	**47**

[1] Managed in overall compliance with legislative and policy requirements in effect during the period audited.

[2] SFL extension supported where applicable and/or licence obligations met during short term as licence holder.

[3] The Agreement with the Algonquin Forest Authority is included in this number.

[4] Three of the 1999 audit reports reached a conditional conclusion as to whether the licensee had met their obligations and/or whether the licence should be extended.

[5] Three of the 2000 audit reports concluded that licence renewal was recommended conditional upon the SFL holder making progress to resolve / implement the recommendations for which they are specifically responsible.

[6] It should be noted that this total exceeds the current number of management units in the province. The reduction in number of management units is due to the rationalization and consolidation of management unit areas (see Chapter 3).

Forest Certification

Forest certification is a voluntary market-oriented system which evaluates forest management systems and/or operations in reference to ecological, economic and social standards. The certification process requires applicants to demonstrate that they are complying with, or progressing towards, those certification standards. Forest products consumers are assured of an unbiased evaluation, when forest certification evaluations are implemented by independent third party organizations (called certifiers). Within the limits of its provincial government mandate, the MNR provides technical and policy advice, both during the development of certification systems and to forest companies seeking certification of forest lands in Ontario.

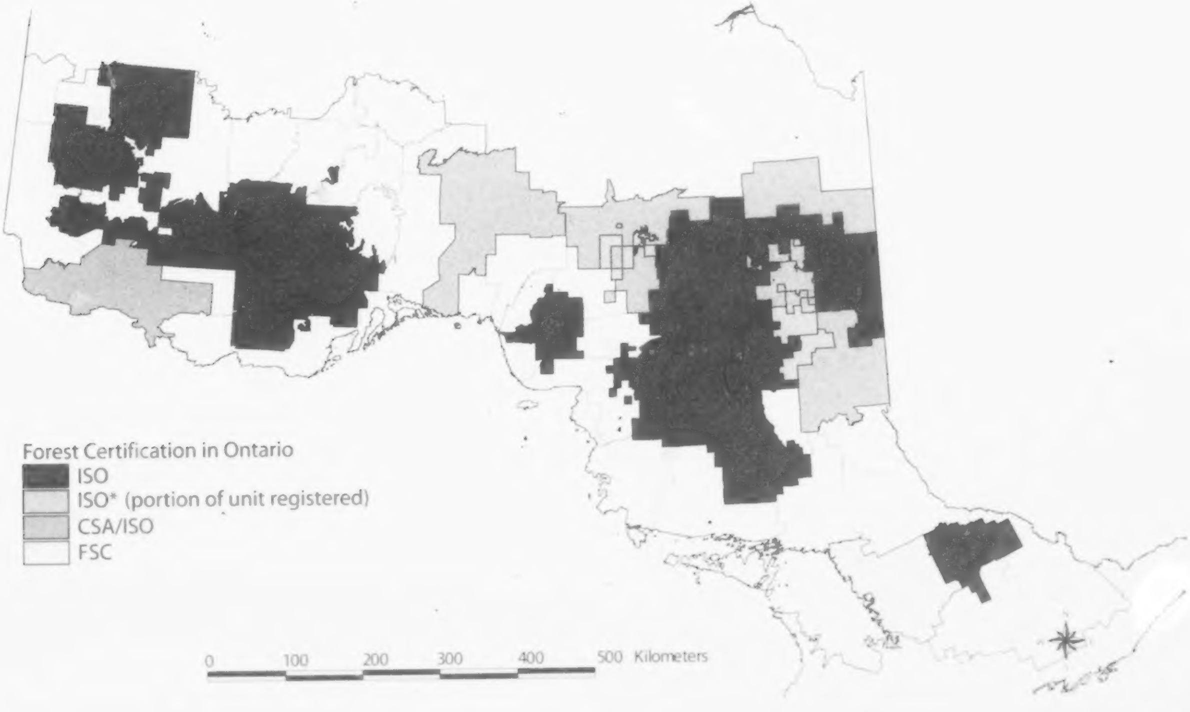
In addition to the generic International Organization for Standardization Environmental Management System 14001 (also called ISO 14001), there are three forest certification systems being considered by Ontario forest companies. These systems are:

- the international Forest Stewardship Council (FSC) Principles and Criteria for Forest Management;
- the Canadian Standards Association Sustainable Forest Management Standard (CSA); and,
- the American Forest and Paper Association's Sustainable Forestry Initiative (SFI).

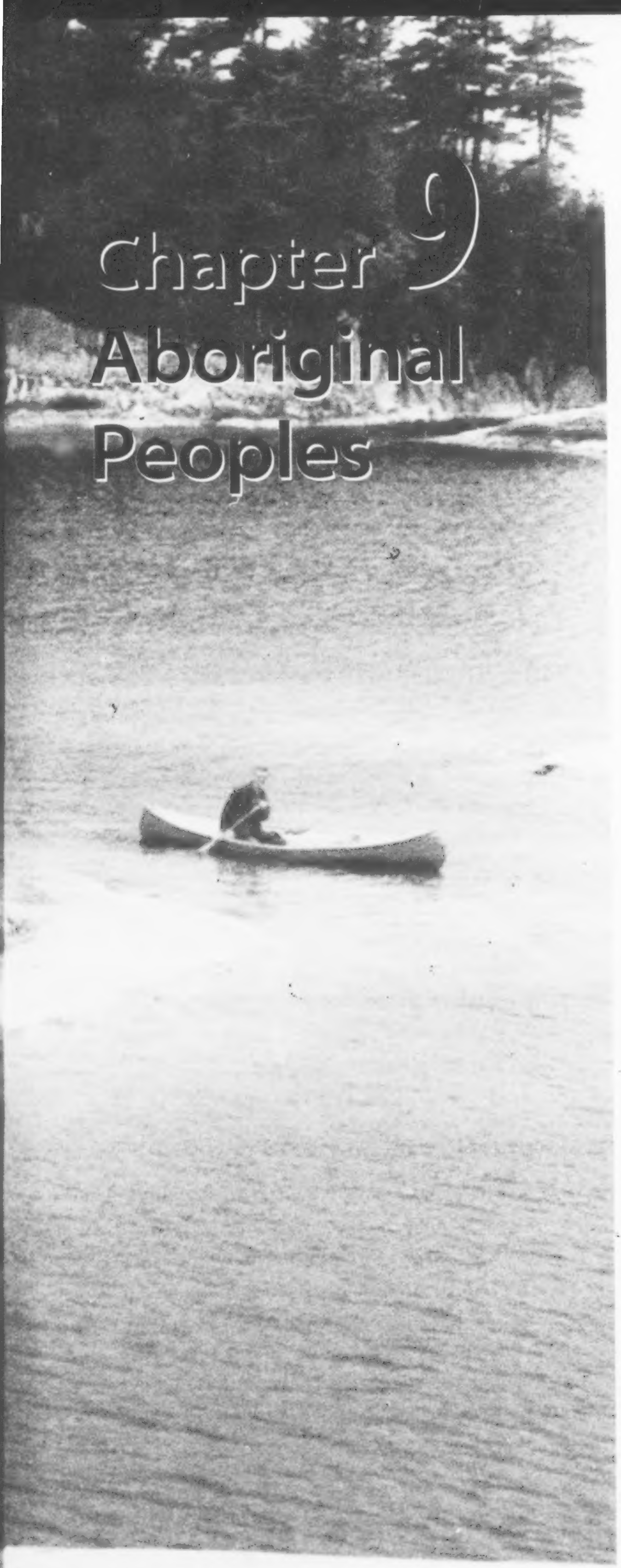
During the 2002/03 fiscal year 7 management units throughout the province obtained new ISO registrations (see Figure 8e). The Crossroute forest, managed by Abitibi Consolidated Company of Canada, became the first unit in the province to become certified under both the ISO registration and CSA certification systems. In addition, all previously registered/certified forest units continued efforts to demonstrate ongoing conformance to their selected certification systems during the fiscal year. It is anticipated that additional forest management units will become certified in the near future.

The MNR ensures the sustainable forest management of Crown forests through a rigorous policy and regulatory framework. Forest companies

Figure 8e Status of forest certification in Ontario, March 31, 2003.


Forest Certification in Ontario
ISO
ISO* (portion of unit registered)
CSA/ISO
FSC
0
100
200
300
400
500 Kilometers

operating in Ontario are required to comply with long-term, ecosystem-based forest management planning. Renewal of timber harvesting licences is dependent upon satisfactory results of a mandatory Independent Forest Audit. Therefore, forest management companies in Ontario are well positioned to meet any forest certification/registration system standard.



Chapter 9 Aboriginal Peoples

Term and Condition #77

Term and Condition (T&C) #77 of the Timber Class EA approval requires the MNR to negotiate with Aboriginal peoples at the local level regarding opportunities for more equal participation in the benefits of forest management. In referring to Aboriginal people, T&C #77 includes communities, individuals, enterprises, and organizations. T&C #77 states:

"During the term of this approval, MNR district managers shall conduct negotiations at the local level with Aboriginal peoples whose communities are situated in a management unit, in order to identify and implement ways of achieving a more equal participation by Aboriginal peoples in the benefits provided through timber management planning. These negotiations will include but are not limited to the following matters:

a) *Providing job opportunities and income associated with bush and mill operations in the vicinity of Aboriginal communities.*
b) *Supplying wood to wood processing facilities such as sawmills in Aboriginal communities.*
c) *Facilitation of Aboriginal third party licence negotiations with existing licensees where opportunities exist.*
d) *Providing timber licences to Aboriginal people where unalienated Crown timber exists close to reserves.*
e) *Development of programs to provide jobs, training and income for Aboriginal people in timber management operations through joint projects with the Department of Indian and Northern Affairs.*
f) *Other forest resources that may be affected by timber management or which can be addressed in the timber management planning process as provided for in Condition 23(c).*"

Implementation of T&C #77

The scope of T&C #77 is broad, and its application and implementation are determined at the local level. The arrangements and agreements effected by

MNR district managers and Aboriginal communities take different forms, in an effort to accommodate the unique needs, capacities, and situations of individual Aboriginal communities in the context of available opportunities.

The implementation of T&C #77 may include the involvement of individual Aboriginal communities or groups of communities with common interests situated in a common geographic area.

In its decision, the EA Board ordered the MNR to build upon initiatives already underway and to provide new opportunities for Aboriginal communities to benefit from forest management activities in their local areas.

The MNR developed the "Implementation Guidelines for Term and Condition #77 of the Class Environmental Assessment" in January 1996, and revised the guidelines in 1999. The purpose of the guidelines is:

- to provide MNR district managers with a consistent framework for implementation of T&C #77 that builds upon existing initiatives and facilitates the development of new initiatives; and
- to provide Aboriginal communities and forest industry companies with the information MNR district managers will use in the implementation of T&C #77.

MNR implements T&C #77 in a manner consistent with the *Crown Forest Sustainability Act*, which provides legislative authority to the MNR for the sustainable management and use of forest resources. The *Crown Forest Sustainability Act* has enabled the MNR to put mechanisms in place that may assist in facilitating the implementation of T&C #77.

While responsibility for implementation of T&C #77 rests with the MNR, the EA Board recognized that the involvement of other parties is critical to successful implementation. Such involvement would include participation of First Nations and other Aboriginal communities, the forest industry, and other government bodies (e.g., Ontario ministries, the Department of Indian and Northern Affairs Canada, and Natural Resources Canada).

Aboriginal participation in forest management and economic development activities is summarized under four categories: access to resources, role in planning and management, silvicultural opportunities, and training and development.

Access to Resources

First Nations are often in a position to operate as forest harvesters. Although Ontario's wood supply is almost completely allocated to Sustainable Forest Licence (SFL) holders, the MNR has helped the industry and Aboriginal communities negotiate types of access. For example, overlapping licences have been issued to First Nations, and First Nations have the first opportunity to buy-in as an independent operator when opportunities arise.

Role in Planning and Management

MNR Districts have sought out effective forums for Aboriginal communities to have a greater say in the planning and management of nearby forest resources. It is mandatory for Forest Management Plans (FMPs) to include a detailed Native Background Information Report and Native Values maps. Districts have provided financial assistance to some communities either to prepare these components themselves or to hire archaeological research contractors.

In many districts, First Nations are represented together with industry and government on forest management planning teams.

Silvicultural Opportunities

Forest renewal includes growing trees, planting, tending, thinning, spraying, and site preparation. Many First Nations have experience in some silvicultural activities and district managers have sought specific agreements between industry and First Nations to detail the type and scope of contract work that can be made available on a competitive basis. This work, taken together, can contribute to an effective economic development program.

Training and Employment

Although the MNR does not have a training mandate, district managers have found ways to help coordinate existing federal and provincial programs to assist Aboriginal communities in preparing for increased participation in forest management activities.

On a local level, districts have provided hands-on training for many years through the Native Internship Program and Sault College's Aboriginal Resource Technician Program.

In some districts, the forest industry provides the training strategy, recruitment and hiring support, and business opportunities for independent contractors. In some instances, the MNR is helping to establish Aboriginal training centres by providing facilities, equipment and leadership. For many years MNR districts have been providing opportunities for joint projects with First Nations, by providing training, funding, facilities, and equipment.

District Progress

The MNR is required to report on the progress of negotiations under T&C #77 for each district. Of the 26 MNR districts, five are outside the Area of the Undertaking (AOU), including Aylmer, Aurora, Cambridge, Midhurst, and Peterborough. A detailed update of the benefits provided to Aboriginal communities in 2001/02 for each MNR district follows.

Algonquin Park

Management unit: Algonquin Park Forest

There are no First Nations or other Aboriginal communities situated within the Algonquin Park Forest. However, Algonquin Park is part of the traditional territory of several Algonquin communities located near the provincial park, including Mattawa-North Bay, Pikwakanagan (formerly Golden Lake), and Whitney. Portions of the park are also included in the Robinson-Huron Treaty and Williams Treaty areas.

Extensive consultations with the Algonquins of Pikwakanagan, the Mattawa-North Bay Algonquins, and the Whitney Algonquins occurred as part of implementation of a Memorandum of Understanding (MOU). This MOU provides the three aforementioned First Nation communities with an opportunity to harvest a minimum of 21,000 cubic meters of wood annually. In 2002/03, these three communities harvested approximately 70,000 cubic meters of wood in total.

Harvesting, silvicultural contracting, road maintenance and construction opportunities were discussed at a meeting that involved the Algonquin Forestry Authority, Algonquin First Nation communities and the MNR. Approximately 1,040 hectares of tree marking and 108 hectares of hardwood stand improvement work were completed by Aboriginal contractors during 2002/03. The Cory Lake Tree Nursery, an enterprise of Makwa Community Development Corporation (Pikwakanagan Algonquin), supplied 133,000 seedlings for planting in the spring 2002. The total value of the contracts awarded to the Algonquin communities in 2002/03 totalled $2.88 million. Twenty-five Algonquin community members were employed in woodland operations in 2002/03.

Discussions were initiated regarding three seats on the 2005 forest management planning team that are to be occupied by First Nation members. Also, discussions began on Native Values mapping and Native Consultation for the upcoming forest management plan.

First Nation members on the forest management planning team have the opportunity to attend forest management planning training modules. Also, the Algonquin Forest Authority is committed to notifying First Nation communities of any training opportunities in forestry (e.g. tree marking, fire training), and to sponsor 1-2 individuals from each community on such courses. The Authority held various training sessions that Aboriginal contractors attended, including courses on tree marking, careful logging, and water crossings. An Annual Work Schedule information meeting is also held with the Algonquin communities each spring.

The Algonquin First Nation communities continue to make significant strides in becoming involved in operational forestry in Algonquin Park. Their operational expertise and capacity is increasing each year.

Bancroft District

Management units: Bancroft-Minden Forest and parts of Mazinaw-Lanark Forest

There are no First Nation communities in the Bancroft District. However, the Algonquin community has satellite communities in the Bancroft, Sharbot Lake, and Whitney areas, and the Pikwakanagan First Nation at Golden Lake also has interests in the District.

One First Nation representative serves on the Local Citizens Committee for the Mazinaw-Lanark Forest.

Discussions regarding potential opportunities have occurred between the Bancroft Minden Forest Company Inc. and various First Nation communities and individuals. Approximately five First Nations persons are working in the logging industry and three are employed doing silvicultural work and tree marking.

No wood harvest licences were issued to First Nation organizations in the 2002/03 fiscal year. The Algonquins of Whitney are a member of the independent licensees group in the Bancroft-Minden SFL, and have a share of harvest rights to approximately 100 hectares a year. In addition 200 hectares of harvesting were undertaken by First Nation loggers working for other licence holders. First Nation contractors completed tree marking and harvest line establishment that totalled 1050 hectares, as well as approximately 70 hectares of hardwood stand improvements. Sixty-six hours of fire line instruction for a prescribed burn were also completed.

Chapleau District

Management units: Superior Forest and Pineland-Martel Forest

The Brunswick House, Chapleau Cree, Chapleau Ojibway and Michipicoten First Nation are the four First Nation communities in the Chapleau District. In addition, the Missanabie Cree, Mississauga and Sagamok Anishnawbek First Nations all have interest areas within the District.

The development of a Tripartite Forest Resource Agreement between the Missanabie Cree First Nation, Weyerhaeuser Inc and the MNR continued. The first draft of the agreement addressed issues including economic development, training, consultation, and community infrastructure. The MNR legal counsel is reviewing the most recent draft agreement completed by the parties.

The Missanabie Cree First Nation's Annual Membership Gathering was attended by staff from both the MNR and Weyerhaeuser Inc. At this gathering MNR staff planned and prepared a wild animal display. A presentation on forest management planning was also delivered by MNR to the First Nation members to raise community awareness of this process. MNR staff attended two Missanabie Cree Elders Gatherings and a First Nation Awareness session. The Elders Gatherings raised awareness of Native Values information collection, mapping and site identification at the grassroots community level. MNR and Weyerhaeuser Inc. staff also presented an overview of the Annual Work Schedule.

The Missanabie Cree Awareness session was held in Wawa for the benefit of Domtar Inc., Weyerhaeuser Inc. and MNR staff, and was planned and facilitated by Missanabie Cree members with support from the MNR. This two-day event provided the audience with a better understanding of this First Nation's history, their current interests, and their vision for the future. Teaching tools used included smudging ceremonies, medicine wheel teachings, and a give-away ceremony. The session also featured a video that portrayed the multi-generational impacts of the residential schooling experience on some community members.

A sawmill company, owned by a Brunswick House First Nation member, met several times with MNR to review and revise the company's business plan. This business plan is needed to secure a facility licence for the existing sawmill. Weyerhaeuser Inc. has committed 1,500 cubic metres of spruce, pine and fir for the mill's operation.

The Chief of Brunswick House First Nation attended two scoping meetings with MNR staff to discuss potential training opportunities aimed at improving this First Nation's ability to effectively participate in MNR's consultation processes.

Seven First Nation communities in the Chapleau District ratified a Communication Protocol Agreement to facilitate access to resource-based opportunities. This agreement involves the Chapleau Ojibway, Chapleau Cree, Brunswick House, Missanabie Cree, Michipicoten, Mississauga and Sagamok Anishnawbek First Nations. Meetings between the MNR and these First Nations were held to begin developing a "District Aboriginal Strategy". These strategy development meetings were used to begin scoping out priorities and issues of mutual concern, including opportunities related to the implementation of T&C 77. Members also formed a Cross Cultural Steering Committee to identify and deliver cross cultural training relevant to the local First Nation communities. The Mississauga First Nation volunteered to deliver cultural awareness training to the Ontario Government and key stakeholder groups in the following year.

Chapleau District provided support to one Chapleau Cree First Nation member enrolled in the Aboriginal Resource Technician Program at Sault College. The candidate has benefited from involvement in district projects and mentoring from district staff. Chapleau District continues to support training programs for Aboriginals, including a joint venture with Wawa District and the Stewardship Ranger Program.

Cochrane District

Management units: Cochrane Management Unit, Driftwood Forest, Iroquois Falls Forest, Moose River Management Unit, Smooth Rock Falls Forest

There are nine aboriginal communities which fall within or have portions of their traditional territories in the Cochrane District. From north to south these are Fort Severn First Nation, Weenusk First Nation, Attawapiskat First Nation, Fort Albany First Nation, Kashechewan First Nation, Moose Cree First Nation, Mocreebec Council of the Cree Nation, Taykwa Tagamou Nation and Wahgoshig First Nation. Only Taykwa Tagamou Nation, Moose Cree First Nation and Wahgoshig First Nation have all or a portion of their traditional territories within the Area of Undertaking.

Discussions between the Moose Cree, Taykwa Tagamou and Wahgoshig First Nations and the forest industry continue, focusing on developing partnership opportunities, specifically developing capacity in harvest, renewal, and management planning. These three First Nations participated in the 2003-2023 Moose River Forest management planning team. Taykwa Tagamou and Wahgoshig also participated in Nighthawk Forest management planning and, through a First Nations Advisory Committee, discussed issues and concerns raised by Aboriginal community members.

The Wahgoshig First Nation, Taykwa Tagamou Nation, Abitibi Consolidated Company of Canada, and the MNR have a partnership agreement signed in November 2000 which provides a framework to address social, cultural and economic concerns on the Iroquois Falls and Nighthawk (Driftwood portion) Forests. Taykwa Tagamou Nation, Tembec Inc. and MNR have a partnership agreement, signed in March 2000 which also provides a framework to address some social, cultural and economic concerns on the areas licenced to Tembec Inc.

Tembec Inc. held biannual meetings with Chiefs from the Moose Cree First Nation, Wahgoshig First Nation and Taykwa Tagamou First Nation regarding issues, opportunities and markets. The Wahgoshig, Moose Cree and Taykwa Tagamou First Nations co-operated with Tembec Inc. and the MNR to develop Native Values mapping on the Moose River and Cochrane management units.

The MNR and Norbord Inc. held discussions to make available 50% of the aspen on the Cochrane unit and 100% of the aspen on the Moose River management unit for First Nation harvest. Taykwa Tagamou Nation and Wahgoshig First Nations obtained harvest allocations on the Iroquois Falls Forest north sub-unit and on the Driftwood Forest. On the Iroquois Falls Forest north sub-unit, Taykwa Tagamou First Nation held three licences with a total harvest allocation of 44,280 cubic metres of conifer and 9276 cubic metres of aspen, while Wahgoshig

First Nation obtained a harvest allocation of 124,026 cubic metres. Total value of Aboriginal-licensed harvest of conifer purchased at roadside by Abitibi Consolidated Company of Canada was $1.1 million, and the total value of aspen was estimated at $140,000. On the Driftwood Forest, Taykwa Tagamou Nation harvested part of overlapping licence areas, held by. Tembec Inc. (119,336 cubic metres) and Norbord Inc. (39,274 cubic metres).

Abitibi Consolidated Company of Canada employed nine First Nation members in planting trees, and two establishing boundary lines. Abitibi Consolidated Company of Canada also permanently employed five Aboriginal people who worked for its Ontario-East Woodlands department. Abitibi Consolidated Company of Canada employs two permanent Aboriginal people at its mill. It also provided job shadowing for two Aboriginal truck drivers and organized GIS training for a Wahgoshig First Nation member.

Aboriginal people have also been employed by a tree nursery that provided plant material to the Iroquois Falls Forest.

MNR purchased two GPS units for each of Wahgoshig, Moose Cree and Taykwa Tagamou First Nations, and will provide a one-day training course in their use in the next fiscal year.

Tembec Inc. sponsored cultural awareness training for its staff, and invited local MNR and Aboriginal communities to participate.

Discussions continue between MNR Cochrane District and Mushkegowuk Council on the creation of a resource centre to provide training, education and access to resource management opportunities for Hudson Bay coastal communities. The Mushkegowuk Tribal Council represents the following First Nations: Attawapiskat, Kashechewan, Fort Albany, Moose Cree, Taykwa Tagamou, Missanabie Cree and Chapleau Cree First Nation.

Dryden District

Management units: Dryden Forest, Wabigoon Forest, and English River Forest

The Eagle Lake and Wabigoon Ojibway First Nations are located in the Dryden District. The Grassy Narrows, Lac Seul, Ojibway Nation of Saugeen, Wabauskang, and Whitefish Bay First Nations are other First Nation communities with interest or ongoing activities in the District.

Communications concerning both the Dryden and Wabigoon Forests occurred by means of regularly scheduled meetings between the MNR District Manager and the Chief and Council for both the Eagle Lake and Wabigoon Ojibway First Nations. Also in the Wabigoon Forest, Weyerhaeuser Inc. had direct discussions with each First Nation community to identify issues and to establish working relationships. These discussions resulted in a number of letters of intent signed between Weyerhaeuser Inc. and First Nation communities.

In 2002/03 Eagle Lake First Nation harvested 5,659 cubic metres of wood on 71.7 hectares from the Dryden forest. Eagle Lake First Nation also sold 10,762 cubic metres of wood harvested from the Wabigoon Forest to Weyerhaeuser Inc. This created 8 months of seasonal employment for approximately 11 First Nation people. Eagle Lake First Nation also sold 3447 cubic metres of wood, harvested from areas other than Crown land, to Weyerhaeuser Inc.

Noopimiing Anokeewin Inc., an Aboriginal-owned business employing Aboriginal people, harvested 14,208 cubic metres of wood on 61.2 hectares from the Dryden forest. Noopimiing Anokeewin Inc. also sold approximately 73,886 cubic metres of wood harvested from the Wabigoon Forest to Weyerhaeuser Inc. These activities provided employment for approximately 20 people.

The Aboriginal People of Wabigoon (a self described Metis group) harvested 6,721 cubic metres of wood on 38.7 hectares in 2002/03.

In the 2001-2021 FMP summary, the Dryden Forest Management Company Ltd. states that within the SFL "7.4 percent of the harvest allocations (determined by controlling interest in the company) are held by Aboriginals or Aboriginal partnership". In addition, 13.11 percent of the allocation is held by Aboriginal people through overlapping licences on the Dryden Forest.

Weyerhaeuser Inc. provided Eagle Lake, Wabigoon and Lac Seul First Nations the opportunity to enter into contracts for pre-commercial thinning. Five First Nations persons were employed for one and a half months by a subcontractor undertaking pre-commercial thinning on the Wabigoon Forest. Weyerhaeuser Inc. provided summer employment for 8 First Nation students in their woodland operations.

The Wabigoon First Nation tree nursery negotiated an agreement with the Dryden Forest Management Company Ltd. to supply it with up to 40 percent of its annual requirement for nursery seedlings. This tree nursery also sold 2.94 million seedlings to Weyerhaeuser Inc. in 2002/03.

MNR has continued making efforts to inform Eagle Lake First Nation, the Aboriginal Peoples of Wabigoon and Noopimiing Anokeewin Inc. about the opportunities that are available through membership in the SFL. Wabigoon Lake Ojibway Nation does not have a designated harvest allocation on the Dryden Forest, but some exploratory discussions with the Dryden Forest Management Company Ltd. have taken place concerning the benefits of membership in the company.

Fort Frances District

Management units: Sapawe Forest, Highrock Forest, and Fort Frances-Flanders Forest

The First Nations located in the Fort Frances District are Big Grassy, Big Island, Couchiching, Lac La Croix, Naicatchewenin, Nicickousemenecaning, Rainy River, Seine River and Stanjikoming. The Whitefish Bay and Onegaming First Nations are located outside of the District, but their traditional territories extend into the District. Lac des Mille Lacs First Nation has an uninhabited reserve adjacent to the Sapawe Forest.

All 11 First Nation communities within and adjacent to the management unit were advised of the Native Consultation process and the required Native Values collection related to forest management planning for the new Crossroute Forest.

There are nine Aboriginal logging contractors operating on the Crossroute Forest, with a total allocation of 172,000 cubic metres of wood. These contractors employ about 30 aboriginal people, mostly as self-employed independent loggers. Additionally, some First Nations Contractors work directly for Abitibi Consolidated Company of Canada These contractors harvest an additional 35,000 cubic metres and employ an additional 13 individuals. Abitibi Consolidated Company of Canada issued silvicultural contracts to 5 aboriginal individuals and First Nations. The contracts had a value of $175,600.00 and employed 18 people. Abitibi Consolidated Company of Canada also issued road construction and maintenance contracts to First Nations and aboriginal individuals valued at $915,000 and employing approximately 10 aboriginal people. One of the road construction contracts was awarded to the Seine River First Nation as a training opportunity. Abitibi Consolidated Company of Canada's silviculture contractor also employs First Nation community members for cone collection. In total, approximately 95 First Nation members are employed in bush and mill operations within the Crossroute Forest.

The District began discussions with Megwin Forest Products, from the Seine River First Nation, regarding a sawmill proposal. A member of the band received training as a sawmill operator, and would like to move an existing sawmill to a site on the reserve. The MNR has conducted discussions regarding timber allocations and has reviewed a preliminary business plan for this proposal.

Hearst District

Management units: Gordon Cosens Forest and Hearst Forest

Constance Lake is the only First Nation community located in Hearst District. The Hornepayne, Moose Cree and Taykwa Tagamou First Nations also have interests within the District.

The MNR issued an invitation to Constance Lake, Taykwa Tagamou, and Moose Cree First Nations to participate as members of the forest management planning team for the Gordon Cosens 2005-2025 Forest Management Plan.

Efforts to negotiate an Agreement of Coexistence between Constance Lake First Nation, the forest industry, and the federal and Ontario governments have been ongoing since 1997. A draft Agreement remains unsigned, and negotiations did not occur during 2002/03.

The MNR, the Ministry of Northern Development and Mines and federal agencies are partners in the development of a destination tourism centre to be constructed on Highway 11 near the Shekak River, within the Hearst Forest. In October, 2002 the MNR committed $2.0 million towards the Constance Lake First Nation's "Eagle's Earth" tourism centre related to this Signature Site. The value of First Nations culture is an important theme and may lead to other opportunities to enhance cultural values and knowledge.

The district continues to partner in providing a liaison position and a Native Values Office located at Constance Lake First Nation.

Constance Lake First Nation has been issued an allocation of 13,030 cubic metres per year on the Hearst Forest. It is harvested by Mammamatawa Inc., which is operated and staffed by members of the Constance Lake First Nation, and currently employs 28 full and part-time workers. Mammamatawa Inc. is negotiating for an additional allocation from the Kenogami Forest. Mammamatawa Inc. also harvested approximately 90,000 cubic metres of wood in 2002/03 for Tembec Inc. and Lecours Lumber Company Ltd. About 65 workers, or 50% of the work force of the Lecours Lumber Company Ltd. sawmill, are First Nation members.

First Nation Timber Ltd. of Kapuskasing harvested 100,000 cubic metres of wood in 2002/03 for Tembec Inc.'s Spruce Falls mill.

Members of Constance Lake First Nation were hired for slash pile burning and semi-commercial thinning projects.

Hearst Forest Management Inc. meets annually with the Constance Lake First Nation Trapper's Council. The SFL holder also held meetings with individual trappers, before operations commenced that could affect traplines. These meetings were to inform the trappers of plans for forest operations, and to develop alternative prescriptions if needed.

The forest industry and MNR contributed to the Constance Lake Scholarship program. The MNR and Hearst Forest Management Inc. have jointly hired a First Nation forestry graduate, and are providing training.

Kemptville District

Management units: parts of Mazinaw-Lanark Forest

The Mohawk Council of Akwesasne and the Algonquins of Ottawa and Sharbot Lake hold regular discussions about forest management opportunities. A member representing the Algonquin communities participates on the LCC. The District continues to encourage and support these efforts to become more involved in the forest industry.

There were no contracts, licences or allocations designated in this district during 2002/03.

Kenora District

Management units: Kenora Management Unit and Whiskey Jack Forest

The 12 First Nation communities located in the Kenora District are: Dalles, Grassy Narrows, Northwest Angle #33, Northwest Angle #37, Ojibways of Onegaming, Iskatewizaagegan, Shoal Lake #40, Wabaseemoong, Wabauskang, Washagamis Bay, Wauzhushk Onigum and Whitefish Bay. Big Grassy and Big Island First Nations are located in the Fort Frances District, but have reserve lands and an interest in resource planning in the Kenora District.

There is a First Nation member on the Kenora District LCC. Discussions between First Nations, the MNR and Weyerhaeuser Inc. were included as part of recent SFL licence negotiations. The SFL licence was issued to Weyerhaeuser Inc. in July, 2002. As a result of these discussions a number of agreements and memorandums of understanding were established.

Three First Nations have access to forest resource licences, although one, Shoal Lake 40, has not exercised this opportunity in recent years. The Iskatewizaagegan First Nation has an allocation of 2,407 cubic meters of conifer per year. The Wabaseemoong First Nation has an allocation of 7,221 cubic meters of conifer per year.

Two First Nations also have access to forest resource licences (FRLs) on the Whiskey Jack SFL, Grassy Narrows First Nation has an allocation of 10,000 cubic metres but has not exercised this opportunity in approximately 5 years. Wabauskang First Nation has an allocation of 10,000 cubic meters of conifer per year and have been actively harvesting their allocation for several years. Grassy Narrows First Nation has been actively involved in the Whiskey Jack silviculture programs and mechanical tending operations.

A number of First Nation individuals are currently employed at the Trus Joist (Weyerhaeuser Inc.) mill.

Kirkland Lake District

Management units: Timiskaming Forest and part of Iroquois Falls Forest

There are two First Nation communities (Wahgoshig and Matachewan), and one Aboriginal community (Beaverhouse) located within the Kirkland Lake District. The Temagami and Mattagami First Nations are located outside of the District, but these communities have expressed an interest in forest management within the district.

Discussions involving MNR, forest industry and First Nations have occurred as part of the forest management planning process. Discussions have focused primarily on silvicultural opportunities potentially leading to harvesting contracts. As a result of an MNR District Strategy related to the management of crown timber on private lands, progress has been made in developing partnerships between First Nations and forest industry for the harvest of reserved crown timber on private lands.

The Beaverhouse community has also been involved in discussions, related primarily to silviculture opportunities.

The Wahgoshig First Nation is continuing discussions with the Timiskaming Forest Alliance Inc. and the MNR to develop an agreement on economic opportunities, including all aspects of planning and forest management. A Memorandum of Understanding has been reached between the Wahgoshig First Nation and Tembec Inc., regarding working together and establishing a business and social relationship for mutual benefits. This MOU extends into both the Timiskaming and Iroquois Falls forests.

In 2002/03 the Wahgoshig First Nation held a tree planting contract for 364,780 trees with Tembec Inc.

The Wahgoshig First Nation, the MNR and Abitibi Consolidated Company of Canada also have an agreement in place to address social economic and cultural concerns. Further to this arrangement, the Wahgoshig First Nation successfully negotiated a third party licence with Abitibi Consolidated Company of Canada to harvest 99,875 cubic metres of timber on the Iroquois Falls Forest. The Wahgoshig First Nation has also participated in resource values mapping work with the MNR and Abitibi Consolidated Company of Canada A working partnership between the Wahgoshig First Nation and Abitibi Consolidated Company of Canada provides targets for training opportunities and financial support for training, education, youth development, access upgrades and implementation of the agreement.

The Matachewan First Nation, with the strong support of the Chief and Council, has created a liaison position. Through this position the Matachewan First Nation has become involved in all aspects of information collection and in the development of protection strategies for forest values, and has enhanced their participation in the FMP process. The Matachewan First Nation has been provided assistance by the MNR to establish a community archive of values information.

The Matachewan First Nation has been pursuing opportunities with Timiskaming Forest Alliance Inc. to develop a long term agreement for horse-logging allocations in the Timiskaming Forest. In 2002/03 Matachewan First Nation obtained an overlapping licence permitting the horse-logging of 250 cubic metres of timber.

In 2002/03, the Matachewan First Nation undertook a pre-commercial thinning contract on 180 hectares with Timiskaming Forest Alliance Inc. The Matachewan First Nation was also involved in the planting of 439,000 trees for Timiskaming Forest Alliance Inc.

Nipigon District

Management units: Lake Nipigon Forest, Nakina North Forest, Kenogami Forest, Ogoki Forest, Pic River Ojibway Forest, and parts of Black Sturgeon Forest and Lakehead Forest

The First Nations located in the Nipigon District are Animbiigoo Zaagi'igan Anishinaabek, Aroland, Biinjitiwaabik Zaaging Anishinaabek, Eabametoong, Ginoogaming, Kasabonika Lake, Long Lake #58, Marten Falls, Neskantaga, Nibinamik, Ojibways of the Pic River, Pays Plat, Red Rock, Sand Point, Wawakapewin and Webequie First Nations. However, Kasabonika Lake, Neskantaga, Nibinamik, Wawakapewin and Webequie First Nations are north of the AOU. The Constance Lake, Fort William, Gull Bay and Whitesand First Nations have traditional lands within the Nipigon District.

Animbiigoo Zaagi'igan Anishinaabek continued participation on the Lake Nipigon Forest planning team, and a member of the community continues to actively participate on the Nipigon East Area LCC. An FRL for the Lake Nipigon Forest issued to the Animbiigoo Zaagi'igan Anishinaabek First Nation has an annual commitment of 14,530 cubic metres. In addition to this regular harvest licensing, Animbiigoo Zaagi'igan Anishinaabek continued to participate in the salvage harvest of the 1999 Beardmore Fire (38,802 cubic metres), and was one of the first salvage operators in the 2001 blowdown depletion (heavy snow loading damage). Animbiigoo Zaagi'igan Anishinaabek is also taking the initiative to explore additional salvage harvest opportunities in cooperation with Domtar Inc.

The Aroland, Eabametoong and Marten Falls First Nations are involved in advanced stages of discussion regarding harvesting, tree planting and site preparation opportunities in the Nakina North and Ogoki Forests. All three communities agreed to participate in the Native Consultation process for the development of the 2003-2023 Ogoki FMP. Two of the three communities hosted a Second Information Centre for the 2003 Ogoki FMP. All three First Nations have formed corporations that have been issued Forest Resource Licences. For these corporations, this is the third year that they have had licences and/or continued operations from last year. Aroland has a licence to harvest 34,899 cubic metres, while Eabametoong has a licence to harvest 63,416 cubic metres. Marten Falls has a licence to harvest 61,258 cubic metres from the Ogoki forest, and 5,062 cubic metres from the Nakina North Forest.

Residents from Aroland First Nation continue to work in the Kimberly Clark Inc. woodlands.

Three Nations Management Inc. supports the development of First Nations harvesting companies by creating business plans, searching out funding opportunities, and providing a significant training program for existing and potential employees in harvesting operations. The Aroland, Eabametoong and Marten Falls First Nations have representation on the Three Nations Management Inc. Board of Directors. The General Manager of Three Nations Management Inc. assists the First Nations forestry corporations with administrative functions such as licencing and operational duties such as Compliance monitoring, and also acts as First Nations representative on the 2003 forest management planning team for the Ogoki Forest.

The Aboriginal component of the site preparation contractors program that began in 1999/00 for the Nakina North and Ogoki forests continued in 2002/03. Some progress was also made in developing First Nation community interest in tree planting work, through the contractors selected by Long Lake Forest Products.

An FRL for the Lake Nipigon Forest gives the Biinjitiwaabik Zaaging Anishinaabek First Nation an annual harvest commitment of 58,860 cubic metres. Biinjitiwaabik Zaaging Anishinaabek First Nation also has a MOU with Bowater Inc. for 60,000 cubic metres per year on the Black Sturgeon Forest, but a licence to harvest has not yet been negotiated. Biinjitiwaabik Zaaging Anishinaabek completed a feasibility study and business plan for a commercial fuelwood facility for underutilized white birch. MNR has committed 25,000 cubic metres of birch to the First Nation for this purpose. MNR's review of the proposal and discussions with Biinjitiwaabik Zaaging Anishinaabek First Nation were ongoing at the end of 2002/03, as MNR continues to assist Biinjitiwaabik Zaaging Anishinaabek in achieving this opportunity.

Constance Lake First Nation has the opportunity to operate as a second party operator to Kimberly Clark Inc. although there was no harvesting conducted this fiscal year. Plans are for this First Nation to form a joint venture with a company as a means to build capacity.

The Ginoogaming First Nation continued to have community members working at the Long Lake Forest Products Mill. Residents also continue to be employed in the Kimberly Clark Inc. woodlands.

The Gull Bay First Nation has an overlapping licence on the Black Sturgeon Forest, with an allocation of 243,000 cubic metres in 2002/03. Gull Bay First Nation contractors entered into a number of contracts with Bowater Inc. for tree planting and juvenile spacing. Community members carried out these contracts. As well, the First Nation itself had a tree-planting contract.

The Long Lake #58 First Nation community is participating in First Nation Values data collection for the Kenogami Forest. Residents are also employed in the Kimberly Clark Inc. woodlands.

The Ojibways of the Pic River First Nation has a development corporation with a Manager of Operations who participates as a member of both the planning team and LCC for the Pic River Ojibway Forest. Pic River Development Corporation is a partner in the SFL business plan for the Pic River Ojibway Forest. Pic River Development Corporation meets 4 times a year with SFL business plan partners to discuss wood supply, silviculture, overlapping licence volumes, and job creation. Two overlapping Forest Resource Licences are held by the Pic River Development Corporation. The first licence has a 2-year term, with 2002/03 being the second year of the term. The second licence has a 3-year term, and 2002/03 is the first year of the term. Total licenced wood volume is estimated to be 62,715 cubic metres per year, with an area of licence of approximately 62 square kilometres. A tree planting contract for 1.2 million trees was administered by Pic River Development Corporation in 2002/03. The Ojibways of the Pic River First Nation also have ten Category 2 fire crews that are successfully employed by the MNR in forest fire suppression.

A Pays Plat First Nation member is a participant on the Kenogami forest management planning team.

Both Fort William First Nation and Red Rock First Nation appointed a consultant to represent them on the Lakehead Forest management planning team. Both First Nations were offered 25 hectares of harvest area in the Lakehead Forest 2002-2022 FMP.

The Red Rock First Nation continues to actively participate on the Nipigon East Area LCC. There are negotiations ongoing to identify harvest area on the Lakehead Forest for the Red Rock First Nation. Red Rock First Nation has an FRL for the Lake Nipigon Forest with an annual harvest commitment of 69,790 cubic metres.

Whitesand First Nation held contracts with Bowater Inc. for tree planting and stand spacing work, and had discussions with Bowater Inc. toward obtaining a timber harvest licence. Whitesand First Nation also requested that Bowater Inc. drop certain blocks from aerial tending, and Bowater Inc. agreed to this request. In addition, Whitesand First Nation received a licence to harvest 44,000 cubic metres of timber in the Caribou East Parcel.

Niigaani Enterprises Inc. is an Aboriginal-owned and operated logging company that harvested 73,550 cubic metres of green wood and 44,910 cubic metres of salvage wood under an overlapping FRL on the Black Sturgeon Forest.

Matawa First Nations Management, a First Nations organization directed by ten member communities, was awarded a contract for the planting of 824,600 trees in 2002/03. Generally, Matawa First Nations Management is notified of all silvicultural contracts issued in the District, and harvesting opportunities in the District are directed through Matawa First Nations Management to ensure fairness to all First Nations involved.

Kimberly Clark Inc., Longlac Wood Industries Inc., Columbia Forest Products, and Lecours Lumber Co. Ltd made available silvicultural contracts, which included thinning, tree planting, Free-To-Grow assessments, spacing, nursery stock production and cone collection on the Kenogami Forest. Kimberly Clark Inc. directly employs a number of First Nation members within its operations. Domtar Inc. continues to explore additional silvicultural opportunities for local First Nations in the Lake Nipigon Forest.

North Bay District

Management units: Temagami Management Unit, Nipissing Forest

The Antoine Algonquin, Dokis, Mattawa North Bay Algonquins, Nipissing, and Temagami First Nations have communities located within the North Bay District. They continue to participate in the North Bay District Aboriginal Working Group. In this fiscal year, Matachewan First Nation began attending some sessions as North Bay District worked with this community to identify their area of interest within North Bay District.

Four North Bay District Aboriginal Working Group sessions were held in 2002/03, involving discussion on resource issues such as forestry, non-timber forest products, economic development, and training needs and available courses. The SFL holder, Nipissing Forest Resource Management Inc., participates with the District Aboriginal Working Group on an ongoing basis.

Awareness was also increased through First Nation participation on the planning team for the 2004-2024 Forest Management Plan for the Nipissing Forest. A member of the Antoine First Nation participated on the Local Citizens Committee for the Nipissing Forest, while a member of the Mattawa North Bay Algonquins was an alternate. The Temagami First Nation participated in the forest management planning team for the Temagami Crown Management Unit.

Six forestry and training information faxes were sent to all First Nations and independent Aboriginal contractors. The MNR also sponsored an economic development workshop aimed specifically at the Aboriginal communities of the area. The event focused on working with non-aboriginal partners, creating wealth, doing business with Aboriginal people, a discussion of potential opportunities, the development of Aboriginal tourism, and the politics of economic development.

The North Bay District Manager and area foresters met with Dokis First Nation, Nipissing First Nation, Temagami First Nation, Mattawa North Bay Algonquins and Antoine First Nation to review harvest allocations and potential opportunities. After a review, the District allocated the final 2% of the allowable harvest area as follows: 0.4% was awarded to the Madadjiwan Economic Development Corporation (Mattawa North Bay Algonquins); 1.1% was awarded to the Antoine First Nation; and, 0.5% was awarded to Nbisiing Forestry Inc. (Nipissing First Nation).

The Antoine Algonquins continue to work with MNR on their sugar bush project in the Mattawa area. There has also been good cooperation with Tembec Inc. (who hold the forest resource licence for the area) and with Nipissing Forest Resources Management Inc, in providing support for the project. A preliminary needs study was carried out and received tentative approval. Preliminary inspections were carried out, and the area was thinned and harvested for sugar bush management by Tembec Inc. Both the Ontario and federal governments are reviewing funding applications submitted by Antoine First Nation for this project.

The Nipissing First Nation is sole owner of Nbisiing Forestry Inc., which oversees harvest operations on and off reserve. On reserve allocations are guided by the Forest Management Plan (2001-2021) for Nipissing Reserve, which was developed by following the guiding principles of the *Forest Management Planning Manual for Ontario's Crown Forests*. Nbisiing Forestry Inc. harvested 10,207 cubic metres during this fiscal period on a Crown land allocation. There is one year left in the 5-year Forest Management Plan cycle. Grant Forest Products worked closely with Nbisiing Forestry Inc. regarding setting up roads on their Crown allocation during this past year. Cutter Forestry Consulting of North Bay continues to work in the Nipissing First Nation forestry program both on and off reserve.

Temagami First Nation forestry activities were funded during the last fiscal year by the final year of a three-year Forestry Futures Trust Fund contract. Workers completed 311.8 hectares of manual tending on Crown land under a renewal and maintenance agreement. Temagami First Nation also completed 404.6 hectares of pre-commercial thinning. The total value of the three-year renewal and maintenance agreement was $720,000. Temagami First Nation workers also completed manual tending for Grant Forest Products. Temagami Cedar, a private company at the Temagami First Nation, provides two full-time jobs and has an allocation of 3,000 cubic metres of cedar for custom milling.

The Dokis First Nation is working on organizing a forestry department. Dokis First Nation, working on the third year of a four year overlapping Forest Resource Licence, has made significant progress in its forestry operation in Hardy Township, with a harvest of 9,793 cubic metres in the last fiscal year. The Ministry of Natural Resources continues to support Dokis First Nation with support of a compliance technician. Nipissing Forest Resource Management Inc. has also contributed manpower to Dokis First Nation.

Forestry operations by the Madadjiwan Economic Development Corporation, a company owned by the Mattawa North Bay Algonquins, continued operations this fiscal year. The corporation has an overlapping FRL with an annual allocation of 12,000 cubic metres. They harvested 10,207 cubic metres in the last fiscal year.

Redbridge Forestry, an Algonquin contractor, continues to plant trees in addition to stand improvement work in the Wasi Deer Yard, providing about 15 jobs. The same contractor was successful in bidding to manage McConnell Lake area camping sites, providing additional employment opportunities for aboriginal people. The Loring Deer Yard Stand Improvement Project ran for the second of a three-year winter term, providing jobs for aboriginal people. Some 25 jobs were spread among several First Nation communities, including the Temagami First Nation.

Training opportunities were provided by MNR, with funding for brushsaw certification, fire training (as it relates to forestry operations), St. John's Ambulance training, and chainsaw training. These training opportunities, which helped to provide capacity for Aboriginal people who work in the forestry sector, were coordinated by Nipissing Forest Resource Management Inc.

A Native Values workshop was held in North Bay in the spring of 2003, with 87 participants, including Aboriginal communities, forestry representatives, consultants and MNR staff. Cultural and aboriginal values, archaeological sites and their impact on forestry were discussed by practitioners. This event was sponsored by MNR, Nipissing Forest Resources Management Inc., and the Ontario Ministry of Culture.

Parry Sound District

Management unit: French-Severn Forest

The six First Nations located in the Parry Sound District are Henvey Inlet, Magnetawan, Moose Deer Point, Shawanaga, Wahta Iroquois, and Wasauksing. As well, the Dokis First Nation, adjacent to the French-Severn Forest, is active in forest management in the District.

The Shawanaga First Nation has a member participating on the LCC, while Henvey Inlet First Nation has a member participating in the forest management planning team for the French-Severn Forest. Wasauksing First Nation worked on their Native Values Background Report in fiscal 2002/03.

Henvey Inlet First Nation had a silvicultural contract in 2002/03 for chemical (ground) tending which employed 6 people for 4 months.

Westwind Forest Stewardship Inc., the local SFL holder, held 2 First Nations forestry initiatives meetings in the 2002/03 fiscal year. There was discussion related to the allocation of harvest opportunities to First Nation's communities. However, there is currently very limited capacity among First Nations to conduct harvesting operations. There were also discussions about community fuelwood areas and the desire to have a First Nation's director on the Westwind board of directors. There were no licences, wood supply or silvicultural contracts awarded as a result of these meetings.

Discussions also continue on a regular basis to identify opportunities and build expertise in the forestry sector for First Nations within the District, including training and development opportunities.

Pembroke District

Management unit: Ottawa Valley Forest

There are several Algonquin communities within the Pembroke District. The Algonquins of Pikwakanagan at Golden Lake is the only Indian Reservation designated under the Indian Act. However, there are several off-reserve Algonquin communities in the District. These communities are contained within established communities including Golden Lake, Pembroke and Renfrew.

There was continued dialogue in 2002/03 with the Algonquins of Pikwakanagan, who are interested in participating in silvicultural opportunities, and with the Mattawa/North Bay Algonquins, who are interested primarily in harvesting timber, but have also indicated a desire to participate in silviculture contracts to build capacity. Offers were made by MNR and Ottawa Valley Forest Inc., the SFL holder, to conduct forestry training, specifically to educate the general community and build understanding and capacity regarding forest management and its associated benefits.

The Algonquins of Pikwakanagan First Nation, through an affiliated company, Makwa Community Development Corporation Inc., have maintained an overlapping FRL and Associate Partner status on the Ottawa Valley Forest SFL since 1996. Ottawa Valley Forest Inc. routinely discusses contract opportunities with Makwa Community Development Corporation Inc., including silvicultural contracts for harvest prescriptions, layout, tree marking, stand improvement, tending, pruning, data collection, and the production of nursery stock. A benefit of these contracts includes the employment of Aboriginal individuals in the Greater Golden Lake Region. Fiscal 2002/03 marks the first year of harvest activity on the Makwa Community Development Corporation Inc. overlapping licence. Harvest operations utilized 2,038 cubic metres of mixed hardwood, and 31 cubic metres of mixed conifer, on a total harvested area of 24 hectares.

Makwa Community Development Corporation Inc. harvest operations were conducted by Randy Commanda Forestry Services and subcontractor Bruce Jones Logging. Kakina Forestry and Consulting Services provided the compliance functions for this harvest operation. Contracts for tree marking and layout were carried forward from last fiscal year between Makwa Community Development Corporation Inc., Randy Commanda Forestry Services, and Kakina Forestry and Consulting Services for 238 hectares, and a new contract was awarded for 122 hectares. Makwa Community Development Corporation Inc. was also awarded contracts for 15 hectares of tolerant hardwood stand improvement, and a contract for 70 hectares of manual cleaning during 2002/03.

Ontario Resource Management Group Inc. was awarded tree marking contracts totalling 2,456 hectares. This work supported two full time positions occupied by Algonquin forest technicians and certified tree markers.

Ottawa Valley Forest Inc. purchased 100,000 bare root white pine nursery stock from the Corry Lake facility, managed by Makwa Community Development Corporation Inc., for tree planting in fiscal 2002/03.

Ottawa Valley Forest Inc. staff conducted on-site training for First Nation tree marking crews during field audits and tree marking projects. Kakina Forestry and Consulting Services sent an individual to MNR Forest Compliance Certification Training.

Ottawa Valley Forest Inc. partnered with The Wilderness Group in the Northern Forest Improvement and Employment Initiative, supported by eleven First Nations communities, thirteen SFL licence holders and forest companies, and Ontario's Living Legacy Trust. The purpose of this initiative is to create First Nations and northern youth employment opportunities, to develop trained future forestry workers, and to significantly improve the quality and quantity of Crown wood. This initiative began the youth employment recruitment process in November 2002 for fiscal 2003/04 operations. Posters advertising employment opportunities in the area of tree planting and stand tending were provided to Makwa Community Development Corporation Inc. for posting on their job bulletin boards.

Red Lake District

Management units: Trout Lake Forest, Red Lake Forest and Whiskey Jack Forest (Management for the Whiskey Jack Forest is administered by Kenora District)

The Deer Lake, Keewaywin, McDowell Lake, North Spirit Lake, Pikangikum, Poplar Hill, and Sandy Lake First Nations are located in the Red Lake District. All seven communities are remote, with winter access only, and are not located within designated forest management units. However, forest operations are carried out within the traditional use areas of the Cat Lake, Pikangikum, Wabauskang, Slate Falls, Grassy Narrows, and Lac Seul First Nations, as well as the local Aboriginal people living off-reserve in the communities of Red Lake and Ear Falls.

Over the past few years the Pikangikum First Nation met regularly with the MNR and local forest companies regarding proposed changes to the Red Lake Forest Management unit. Previous discussions that focused on establishing Pikangikum First Nation as a Class B shareholder on the Red Lake Forest management unit have concluded. The original concept was based on the ability to expand the Red Lake Forest management Unit through a declaration order. This option was dropped in favour of first developing a broader land use strategy under the Northern Boreal Initiative, prior to undertaking any commercial forestry activity.

Discussions are in the advanced stages between Pikangikum First Nation and the MNR regarding SFL opportunities north of the Area of the Undertaking. The MNR is presently working in partnership with Pikangikum First Nation on the Whitefeather Forest Initiative, a community-based land use planning strategy that will include forestry as a land use. This land use direction will lead into the next stages of fulfilling the requirements under Environmental Assessment Act for forest management activities outside of the current Area of the Undertaking. Pikangikum First Nation and Weyerhaeuser Inc. are also in negotiations to formalize a working relationship regarding the Whitefeather Forest Initiative.

Whitefeather Forest Management Corporation, a joint venture between Pikangikum First Nation and Timberline Forest Inventory Consultants Ltd., was licenced to harvest timber from the right-of-way of the all-weather road under construction to Pikangikum First Nation.

Lac Seul First Nation worked with the MNR through a local First Nation consultant for the collection of Values within the Lac Seul First Nation traditional use area in the Trout Lake Forest. Weyerhaeuser Inc. is in regular contact with the Lac Seul First Nation regarding wood purchasing and silvicultural contracts for the Wabigoon Forest.

The Red Lake Forest Management Company has a formal standing offer with the Pikangikum First Nation for silviculture work, including tree planting and thinning. A nuisance beaver removal contract with the Native Trappers Council is also ongoing, providing employment opportunities for three to four First Nation members. The Red Lake Forest Management Company has also offered training regarding harvest operations, road construction, and millwork to local First Nations.

Pikangikum First Nation students were involved in data collection programs for the Northern Boreal Initiative. North Spirit Lake First Nation participated in a Lake Survey Program with MNR to identify new tourism opportunities. The Northern Chiefs Council (a council advising and assisting the Deer Lake, Fort Severn, Keewaywin, McDowell Lake, North Spirit Lake, and Poplar Hill First Nations) participated with the MNR in a science camp for First Nation's youth; 5 communities were visited.

An estimated 38 Aboriginal workers are employed in saw mills and bush operations in the Red Lake District.

Sault Ste. Marie District

Management units: Algoma Forest and parts of Northshore Forest

The Garden River, Mississauga, Ojibways of Batchewana, Serpent River, and Thessalon First Nations are located within the Sault Ste. Marie District. The North Shore Tribal Council is also active within the District.

Garden River and Batchewana First Nations both have a representative participating in the forest management planning team for the Algoma Forest, while the Mississauga, Serpent River, and Thessalon First Nations all have representatives participating in the forest management planning team for the Northshore Forest.

The Robinson Huron Forestry Company (Aboriginal owned) was issued two FRLs in 2002/03 for harvesting a total of 1820 hectares (28,902 cubic metres) on the Sault Ste Marie portion of the Northshore Forest. The MNR made a conditional commitment of 10,000 cubic metres of low-grade hardwood to a Garden River First Nation band member. Domtar Inc. made a harvest allocation available to a Garden River First Nation band member. This allocation will be available until the end of the current planning term in 2005.

A contract for cone collection of 33.7 hectolitres was awarded to the North Shore Tribal Council. Total contracts had a value estimated at $3,500. Clergue Forest Management Inc. is also cooperating with Batchewana First Nation to develop a program for the harvesting of ground hemlock on the Northshore Forest.

Negotiations were conducted with Garden River and Batchewana First Nations, concerning the training of an Aboriginal Conservation Officer. MNR also provided a vehicle for a year for the Native Conservation Officer program at the Mississauga First Nation.

Sioux Lookout District

Management units: Caribou Forest and Lac Seul Forest

There are 14 First Nations communities situated in the Sioux Lookout District, of which only three (Lac Seul, New Slate Falls, and the Ojibway Nation of Saugeen) are located within the AOU. Mishkeegogamang and Cat Lake are adjacent to these forests and have some of their traditional lands within the AOU.

Forest management planning for the Lac Seul Forest continues with input from the New Slate Falls, Cat Lake and Lac Seul First Nations. Native Background Reports were supplied to all three communities. Negotiations continue between New Slate Falls First Nation and McKenzie Forest Products Inc. regarding forest operations near the community. A goal of the negotiations is also to develop an operational business arrangement, which would include harvest and road construction activities adjacent to the community.

The Lac Seul First Nation has had a harvesting contract with McKenzie Forest Products Inc. on the Lac Seul Forest for many years, but the volume of wood harvested has been low. Members of the Lac Seul First Nation continue to be employed by McKenzie Forest Products Inc. in their woodland operations (harvest and road maintenance), in the ferry service across Lac Seul, and in the Hudson Mill. Part of a contractual agreement between McKenzie Forest Products Inc. and Lac Seul First Nation commits McKenzie Forest Products Inc. to train Lac Seul members in woodland and ferry operations.

The Mishkeegogamang First Nation has a representative sitting on the Caribou Forest management planning team, who participated in planning team meetings and Information Centres, and facilitated meetings between Mishkeegogamang Band Council, community members and the planning team. The MNR and Mishkeegogamang First Nation continued a Native Values collection project, with the MNR providing funding for the collection and summary of First Nation Values on the Caribou Forest. The Mishkeegogamang Band Council was provided with a finalized Native Background Information Report, and their input and comments were solicited throughout the planning process.

Numerous meetings were held with the Mishkeegogamang Band Council discussing the forest management plan and community concerns. This resulted in a decision to defer operations in areas of significant community concern, to allow time for relationship-building and further discussion. Following approval of the 2002-2022 Caribou Forest Management Plan, additional concerns were expressed by community members living off-reserve. Several meetings were held to understand these concerns, and to attempt to resolve issues. Operations in areas of community concern were temporarily delayed. Bowater Inc. also had a number of capacity-building meetings with Mishkeegogamang First Nation.

The Ojibway Nation of Saugeen has indicated to the MNR that it does not recognise the FMP process and did not participate in the development of the 2002-2022 FMP for the Caribou Forest. Bowater Inc. periodically meets with the Ojibway Nation of Saugeen Chief and Council to keep the community informed of forest operations. In the fall of 2002, Bowater Inc. offered a harvest contract to the community, and company and community representatives jointly marked the cut boundaries. The Ojibway Nation of Saugeen has since advised Bowater Inc. that they do not wish to proceed with this contract.

Bowater Inc. also continued the First Nations Junior Ranger Program, with members from both the Ojibway Nation of the Saugeen and the Mishkeegogamang First Nation participating.

Sudbury District

Management units: Sudbury Forest, Spanish Forest and part of Northshore Forest

The ten First Nations within Sudbury District are: Zhiibaahaasing, Sagamok Anishnawbek, Sheguiandah, Sheshegwaning, Ojibways of Sucker Creek, Wahnapitae, M'Chigeeng, Whitefish Lake, Wauwauskinga, and Wikwemikong. Adjacent communities of Henvey Inlet and Dokis First Nations are active in the District.

Sagamok Anishnawbek First Nation has a member participating in the forest management planning team for the Northshore Forest, while the Whitefish Lake and Wahnapitae First Nations both have members participating in the forest management planning team for the Sudbury Forest.

The SFL holders in the Sudbury District – Vermilion Forest Management Company Ltd. (Sudbury Forest), Northshore Forest Inc. (Northshore Forest) and Domtar Inc. (Spanish Forest) – continue to meet with First Nations communities and individuals to identify and negotiate opportunities and benefits from forest management activities.

The Sagamok Anishnawbek First Nation was granted a harvest approval for 617 hectares (55,744 cubic metres) on the Northshore Forest. A harvest approval for the ten district First Nations, as a group, was issued on the Northshore Forest for 260 hectares (23,620 cubic metres). Northshore Forest Inc. also issued two additional overlapping FRLs to the ten First Nations, for a total of 60 hectares (4,410 cubic metres).

An overlapping FRL on the Sudbury Forest was issued to N'Swakamok, a coalition of the Wahnapitae, Wikwemikong, Whitefish Lake, Henvey Inlet and Dokis First Nations, for approximately 3900 hectares (162,000 cubic metres). The annual harvest is expected to be 48,300 cubic metres. A second overlapping FRL was issued to a Sagamok Anishnawbek First Nation company for approximately 620 hectares, or 5,800 cubic metres.

Two overlapping FRLs were issued on the Spanish Forest, one to Sagamok Anishnawbek First Nation for 35 hectares (approximately 2000 cubic metres), and a second one to the Mattagami First Nation (Timmins District) for 350 hectares (approximately 24,500 cubic metres).

Northshore Forest Inc. provided contract opportunities to the Sagamok Anishnawbek First Nation to plant 708,000 trees, to manually clean 176 hectares, to carry out juvenile spacing on 75 hectares, and to carry out chemical tending on 52 hectares of plantations.

Domtar Inc. provided a 373 hectare pre-commercial thinning contract on the Spanish Forest to a contractor from the Wikwemikong First Nation, plus a tree planting contract for 500,000 trees (350 hectares). Additional contracts were awarded to the Sagamok Anishnawbek First Nation for planting 48,000 trees (55 hectares), and for chemical tending on 40 hectares. Cone collection on the Spanish Forest was also conducted by a First Nation.

Vermilion Forest Management Inc. provided a tree planting contract on the Sudbury Forest to a Wikwemikong First Nation contractor for 50,016 trees (approximately 35 hectares). A manual tending contract for 104 hectares was also awarded to a Dokis First Nation contractor, and a tree marking contract for 206 hectares was awarded to a Wikwemikong

First Nation contractor. In addition, through the Forestry Futures Trust Fund, the SFL also awarded two planting contracts to a Wikwemikong First Nation contractor, for 268,560 trees and for 806,164 trees.

M'Chigeeng First Nation and tribal council (United Chiefs and Councils of Manitoulin) continued the collection of traditional herbal medicines (shrubs, herbs, inner bark of trees) on an area of the Northshore Forest.

The Sudbury District has provided training and technical advice in tenure, measurement and forest management planning to a First Nation licencee on the Sudbury Forest. The District has also provided opportunities for First Nation representatives on forest management planning teams to attend provincial forest management planning courses. The district also provided approximately 17 weeks of work for an Aboriginal Technician from Wahnapitae First Nation, and is working with the Wahnapitae First Nation on data exchange (GIS).

Thunder Bay District

Management units: Armstrong Forest, Brightsand Forest, Dog River-Matawin Forest, Kiashke River Management Unit, Lakehead Forest and Spruce River Forest

The four First Nations located within Thunder Bay District are Fort William, Whitesand, Lac Des Mille Lacs and Gull Bay. In addition, a Metis organization and a number of Aboriginal communities, including the Red Rock First Nation, Namaygoosisagagun First Nation (Collins community), and the Thunder Bay Council of the Metis Nation of Ontario, have been involved in forest management within the District.

The Whitesand First Nation has a representative on the forest management planning team for the Armstrong Forest. The MNR and the Whitesand First Nation signed a Memorandum of Agreement in December 2000 to promote the protection of identified Native Values, and to provide support for Native Values mapping. The agreement also outlines Whitesand First Nation participation in prescription development for protection of new Native Values. As well, the Memorandum of Agreement states that Whitesand First Nation will be offered harvest and silviculture opportunities on salvage areas, and provides for the development of a joint submission package regarding forestry training. Under the Memorandum of Agreement the Whitesand First Nation received an allocation of 550,000 cubic metres in overlapping licences on the Armstrong Forest for the 2000-2005 period, and secured a contract for 70,000 cubic metres annually from Buchanan Forest Products. In 2002/03, the Whitesand First Nation delivered 4,320 cubic metres of softwood and 6,240 cubic metres of hardwood from their allocation. In addition, in fiscal 2002/03 they delivered approximately 82,550 cubic metres of softwood and 13,390 cubic metres of hardwood salvage. Some of the volume harvested during 2002/03 will be hauled during 2003/04.

Domtar Inc. meets annually with Whitesand First Nation to discuss Annual Work Schedule harvest allocation, proposed silvicultural contracts, and the use of herbicides on the Armstrong Forest. Discussions, which include aerial, manual and ground tending projects on the Forest, are aimed at achieving a better understanding of the concerns of both groups, identifying any newly identified Native Values, and working toward achieving a relationship that will satisfy the interests and concerns of both parties. As well, a resource technician with Whitesand First Nation participated in helicopter surveys to identify candidate tending areas proposed within the 2002/03 Annual Work Schedule.

Whitesand Forestry, a community-based forestry company with a harvesting and silviculture division, is owned by the Whitesand First Nation. Whitesand Forestry operated with Buchanan Forest Products Ltd. as a harvest contractor in the 2002/03 operating year. In 2002/03 Whitesand Forestry employed a number of local residents in road construction, harvesting, processing, layout and office support roles. Whitesand Forestry also participated in several renewal and tending contracts, involving tree planting, site preparation, and manual tending work. Whitesand Forestry has participated in two training programs with Buchanan Forest Products

Ltd. as part of a contractual arrangement between these two parties.

Construction of Bowater Inc.'s sawmill located on Fort William First Nation land continued throughout 2002/03. The sawmill is scheduled to be operational in 2003/04. In October 2002 Fort William First Nation became a member of Superior North Loggers Inc., receiving a 25-share stake. Within Superior North Loggers Inc. harvest allocations are apportioned amongst members based on the number of shares held. Superior North Loggers Inc. holds 51% of the shares of Greenmantle Forest Inc., the SFL holder for the Lakehead Forest.

A representative of the Red Rock First Nation is a member of the Lake Nipigon West Area LCC. The Red Rock First Nation continued to decline Greenmantle Forest Inc.'s offer to become a member of Superior North Loggers Inc., but has agreed to harvest 145 hectares (with a volume of approximately 16,000 cubic metres) included in the Lakehead Forest 2002-2022 FMP.

A member of the Lac Des Mills Lac First Nation is on the LCC for the Dog River-Matawin Forest where an area of 157 hectares was set aside in the 2000-2020 FMP for harvest by the Lac des Milles Lac First Nation.

Namaygoosisagagun First Nation has a member on the Planning Team for the development of the 2005-2025 Armstrong Forest FMP. Numerous meetings have been held with Namaygoosisagagun First Nation to finalize a summary of Domtar Inc. and MNR commitments to the community, and to keep them informed of various forestry opportunities. Domtar Inc. meets annually with Namaygoosisagagun First Nation to discuss Annual Work Schedule harvest allocations and renewal areas.

Gull Bay First Nation and Bowater Inc., the SFL holder for the Black Sturgeon Forest, have had numerous meetings to discuss the amalgamation of the Kiashke Management Unit with the Black Sturgeon Forest. The Kiashke Management Unit has been inactive since 1998. To date, issues associated with the proposed amalgamation have not been resolved. Niigaani Enterprises from the Gull Bay First Nation has a harvest allocation of approximately 18,000 cubic metres on the Spruce River Forest.

Tchains Logging, a Metis-owned company, was issued their first overlapping FRL on the Armstrong Forest as a result of additional volume becoming available through a salvage amendment. Their allocation for 2002/03 was approximately 32,300 cubic metres of softwood and 480 cubic metres of hardwood. No harvesting occurred under this licence.

Timmins District

Management units: Romeo Malette Forest, Shiningtree Forest, Timmins Forest, Timmins Management Unit and portions of Pineland Forest and Spanish Forest

Mattagami is the only First Nation in the District. Flying Post First Nation is also within the Timmins District boundary but all residents live off-reserve, in Nipigon. Other interested First Nations include Matachewan, Moose Cree, Wahgoshig, Wahnapitae, Whitefish Lake, Sagamok Anishnawbek and Taykwa Tagamou.

Several First Nation communities participated on the Nighthawk forest management planning team, including Mattagami, Matachewan, Taykwa Tagamou, Wahgoshig and Moose Cree. A First Nations Advisory Committee was established to complement the planning team. This committee provides a forum for First Nations to discuss issues and concerns and to provide positive suggestions for improvements and changes to the planning process.

Mattagami First Nation is continuing discussions with Shining Tree Forest Inc., Tembec Inc. and Domtar Inc. concerning forest management opportunities on the Shining Tree Forest, the Romeo Malette Forest, the Spanish Forest and the Pineland Forest. Domtar Inc. and Tembec Inc. have supplied a letter of support with regards to future allocation for the Mattagami First Nation to secure funding for training in Forest Operations. Domtar Inc. and Mattagami First Nation are working towards a long-term forestry agreement. In 2002/03, the Mattagami First Nation had contracts for harvesting 20,000 cubic metres on the Shining Tree Forest, 48,000 cubic metres on the Romeo Malette Forest, and 20,000 cubic metres on the Spanish Forest. Discussions continue with Mattagami First Nation concerning a partnership involving management of treaty traplines and nuisance beavers, and establishing a trapper's council. A trapper's workshop was held on the Mattagami reserve with both MNR staff and Mattagami First Nation community members. The workshop focused on new trapping legislation, firearm registration and trapper's cabins.

Domtar Inc. and the MNR Gogama office participated in a Career Development Day at the Mattagami First Nation. MNR continued support for the Matachewan First Nation Forestry Liaison position, including negotiations concerning future support for the position.

Wahgoshig First Nation continued discussions with Tembec Inc. regarding forestry opportunities on the Romeo Malette Forest. Wahgoshig First Nation was awarded a 240 hectare commercial thinning contract on the Romeo Malette Forest.

Wawa District

Management units: Big Pic Forest, Black River Forest, Magpie Forest, Nagagami Forest, Wawa Forest and White River Forest

The four first nations located in the Wawa District are Hornepayne, Michipicoten, Pic Mobert, and The Ojibways of the Pic River. Ginoogaming, Long Lake No. 58 and Missanabie Cree first nations have traditional lands in the Wawa District and have an interest in forest management within the District.

The Michipicoten First Nation accepted participation in the preparation of the Algoma (Wawa) 2005-2025 Forest Management Plan. This First Nation has representatives on both the Magpie and Wawa Forest LCCs, and on the Algoma Forest management planning team. The Michipicoten First Nation Economic Development Officer attended FMP overview training in the fall of 2002.

The Pic Mobert First Nation initiated a Native Values collection project for the White River Forest, with more than 150 values identified and mapped. Both a White River FMP Second Information Centre and a Draft Plan Information Centre meeting were held at Pic Mobert First Nation Band Hall. The Pic Mobert First Nation had contracts for the planting of 854,237 trees and the thinning of 323 hectares on the White River Forest. The Pic Mobert First Nation has seven members employed in the forestry sector (mill and bush operations).

The Hornepayne First Nation has an estimated 36 members employed in the forestry sector.

Both a White River FMP Second Information Centre and a Draft Plan Information Centre meeting were held at Ojibways of the Pic River First Nation Band Hall. The Ojibways of the Pic River First Nation initiated a Native Values collection project for the White River Forest, with more than 180 values identified and mapped. These values collected will be used for subsequent Forest Management Plans throughout the White River, Black River, and Big Pic Forest Management Units. The Ojibways of the Pic River First Nation also has an overlapping licence to harvest 16,850 cubic metres annually on the Black River Forest, an additional allocation of 16,850 cubic metres on the Big Pic Forest and an allocation of 30,000 cubic metres on the White River Forest. The Ojibways of the Pic River First Nation has 31 members employed in the forestry sector. Negotiations are continuing for an overlapping licence on this FMU.

The Missanabie Cree First Nation accepted participation in the Magpie Forest Management Native Consultation Program for the five year planning period of 2003-2008. MNR and Dubrueil Forest Products Ltd. staff presented information about the FMP at the Missanabie Cree Annual Gathering in August 2002, and presented information about the FMP and AWS at an Elders Gathering in February 2003. A Community meeting to review the Draft Plan for the Magpie Forest Plan was held in March 2003. The Missanabie Cree First Nation also hosted a Cultural Awareness session for MNR and forest company staff in December 2002. A Missanabie Cree First Nation band member was hired by MNR to coordinate Native Values collection for the FMP. Over 200 Values were collected and mapped. MNR also partnered with the Missanabie Cree First Nation for an aboriginal Stewardship Ranger program in the summer of 2002. Negotiations are continuing to initiate a forestry agreement with the Band and the Forest Industry to harvest allocations in both the Wawa and the Chapleau Districts.

Chapter 10

Research, Scientific Studies, Technical and Policy Development

The MNR keeps pace with the constantly expanding knowledge base for sustainable forest management through research, scientific studies, and technical and policy development programs. These studies and programs span a wide range of subjects, including: the development of new and improved data and information sources; the creation and implementation of new policies, procedures, and guidelines for forest management planning (now called forest management guides); the development of new forest management methods, models, and tools; and, continuing long-term monitoring programs and scientific studies.

This chapter outlines the progress the MNR has made, in co-operation with its partners, on specific scientific, technical, and policy development programs up to, and including, 2002/03.

New and Improved Data and Information Sources

Silvicultural Effectiveness (T&C #96)

A comprehensive and consistent silvicultural effectiveness monitoring program is critical to ensure the sustainability of Ontario's forest resources. It provides the basis for measuring, collecting, analyzing and reporting information on the renewal and state of Ontario's public forests, whether they have been depleted by harvest or natural means. This information is needed not only by the people and companies managing the forest, but also by the owners of the forest - the public.

In 2001/02, the MNR published and distributed the *Silvicultural Effectiveness Monitoring Manual for Ontario*. The manual's purpose is to describe Ontario's Silvicultural Effectiveness Monitoring program, to provide consistency in how silvicultural effectiveness information is gathered and reported. Consistent definitions and standards ensure that results from forest management activities on similar sites and forest conditions are comparable from stand to stand and from management unit to management unit across the province.

During 2002/03 work continued on the STARS (Silvicultural Treatment, Assessment and Reporting System) survey methodology, used to collect silvicultural effectiveness information. STARS is a computer-based data collection and analysis system designed to simplify silvicultural effectiveness monitoring.

A one-day workshop was also held in both the Northwest and Northeast regions, focusing on the need for increased provincial effort in silvicultural effectiveness monitoring.

Forest Ecosystem Classification Program (T&C #97)

The Forest Ecosystem Classification Program referenced in Timber Class EA T&C #97 was integrated into the broader provincial Ecological Land Classification (ELC) program. The mandate of the ELC program is derived from legal requirements of the Timber Class EA approval, as well as the need for ecologically-based planning and reporting at various scales. In the past, forest inventory has focused on commercial species without an ecological context. Current work in the ELC is intended to facilitate a shift to a comprehensive, multi-scaled ecological inventory in which traditional forest inventory information is embedded. The ELC program will establish a comprehensive and consistent province-wide framework for ecosystem description, inventory, and interpretation. The ELC program is also required to address a full range of scales, from the ecoregion level to the site/community level. This combination of ecosystem-based inventory tools and a consistent classification system is fundamental to the achievement of the MNR's objectives for ecologically sustainable resource management.

During 2002-03, ELC sampling continued in Southern Ontario, bringing the southern data set to approximately 1,400 plots. The first approximation of the ELC for Southern Ontario, has been reprinted twice due to popular demand. Current analysis of Southern Ontario plot data will lead to a revised and expanded 2nd Edition in 2005.

In Northwestern Ontario, substantial areas continue to be mapped. Work also progressed on various aspects of integrated inventory approaches, based on a comprehensive training manual for photo-interpretation and inventory published for the Northwest ELC.

Data collection also continued in the far northern portion of the province. This work included reconnaissance and preliminary data collection and detailed ELC plots were established in the vicinity of Pikangikum/Berens River, Goose Lakes, Aguta Moraine and Windigo Lakes. Data collection in the far north will continue until 2004/05, with a special emphasis on forested systems.

Throughout Ontario, work is ongoing to further integrate forest growth and yield data collection with ELC methodology. Joint data collection standards have been prepared and growth plots are now characterized with appropriate soil, vegetation type and ecosite designations. Collaborative work has also begun with the National Forest Inventory program.

Using both the ELC classification approaches and the new ELC-based inventory, draft definitions were developed for old growth forest conditions in Ontario, and circulated for technical review. Additional ELC-based interpretations dealing with non-timber forest products, intensive forest management, and forest management planning continue to be developed.

Training courses in the use of the ELC were offered across the province to a wide array of natural resources professionals, non-government organizations, First Nations, forest industry, and partner organizations. A comprehensive training manual and CD training package were prepared for the Southern Ontario ELC. Integrated training continues to be provided to ELC, Northern Boreal Initiative, National Forest Inventory staff and Provincial Growth and Yield program staff.

Areas of Natural and Scientific Interest (T&C #99)

Areas of Natural and Scientific Interest (ANSIs) are areas of land and water containing natural landscapes or features that have been identified by MNR as needing protection of such values as natural heritage appreciation, scientific study, or education.

They are classified as either life science, earth science, or combined, and are protected during forest management planning through the AOC process.

Implementation of the protected area components of the *Ontario's Living Legacy Land Use Strategy* continued to be the primary focus during the 2002/03 fiscal year. In addition, the methodology for assessing candidate protected areas in the "Room to Grow" context was completed and endorsed by the Ontario Forest Accord Advisory Board.

Progress was made in multi-party discussions on protected areas with some of the First Nations communities located north of the Area of the Undertaking, under the auspices of the Northern Boreal Initiative.

Life Science

Reconnaissance and detailed life science inventories were conducted in numerous protected areas confirmed through the OLL planning process, as well as in several previously existing protected areas, in preparation for the creation or revision of management plans for these sites. Consultations on boundary refinements for OLL protected areas in various parts of the OLL planning area, in preparation for regulation, were also held. A detailed analysis of ecodistrict 7E-5 was initiated. Life science analyses for ecodistricts within ecoregion 3S were started, in support of Northern Boreal Initiative planning processes.

Conservation land securements were achieved through a renewed partnership with the Nature Conservancy of Canada, utilizing various mechanisms (predominantly purchases and donations). These securements were concentrated in the southern part of the province. Resource management planning was begun on several recently secured sites.

In partnership with government and non-government agencies from Michigan, Wisconsin, Minnesota, and Manitoba, Ontario participated in the completion of an ecoregional planning project for the Superior Mixed Forest Ecoregion (including ecoregions 4W and 5S in Ontario). The Great Lakes Conservation Blueprint project, focusing on the Great Lakes basin and including terrestrial and aquatic conservation targets, continued with involvement from OMNR and Nature Conservancy of Canada staff. OMNR staff continued their participation in the North American Bird Conservation Initiative, concentrating on Bird Conservation Region 13 (Ecoregions 6E and 7E).

Earth Science

The main focus of the earth science conservation program during 2002/03 continued to be on *Ontario's Living legacy Land Use Strategy*. Detailed earth science inventories were completed for a few new OLL protected areas. In addition, reconnaissance-level earth science checksheets were completed for the remaining OLL protected areas that were not covered by last year's program. Several dozen of these were completed. The reports generated by these studies provided background information to the planning and regulation processes of the new properties. Several of these products also contributed to management planning of existing provincial parks which had been enlarged by OLL additions. In addition, the identification and field checking of earth science sites to be considered in the OLL Room to Grow exercise was also continued from the previous year. Ongoing review of earth science ANSIs in southern Ontario also continued.

Growth and Yield Studies (T&C #100)

The Ontario Forest Growth and Yield Program was established in 1991 with the specific mandate of providing accurate and defensible information on the growth and dynamics of Ontario's forests as influenced by site, structure, silvicultural treatments, and natural events. Growth and Yield is an essential component of forest management. It provides the data and models needed to understand the current and future state of Ontario's forests, and supplies many of the base inputs required for the calculation of a sustainable wood supply. Forest resource managers require Growth and Yield information as a prerequisite for sustainable forest management, and as a monitoring indicator of sustainable forest management.

An accurate and efficient method of determining growth and yield is through the use of Permanent Sample Plots (PSPs). The growth of a forest can be estimated directly by taking repeated measurements on various ecosystem elements. Beginning in 1992, a province-wide network of PSPs was established over a range of forest sites and management conditions. Data collected from these PSPs provides information about site and soil conditions, vegetation composition, tree growth, regeneration and mortality, and expected timber yields from Ontario's forests. To date, approximately 1,100 PSPs have been established as part of this program. In 1999, the MNR entered into a growth and yield partnership with the Forest Ecosystem Science Co-operative, Growth and Yield Business Unit. This partnership has allowed the plot network to 'grow', and has helped raise awareness of the value of growth and yield data and information in forest management planning, forest certification, and for maintaining forest inventories.

In 2002/03 the Growth and Yield Program focused on three main areas: establishing new plots; maintaining existing plots; and forest growth and yield modelling.

Establishment of New Plots

The Growth and Yield Program maintains two standard protocols for establishing permanent sample plots. The PSP protocol provides base level data on a wide variety of ecosystem parameters, and generates a plot 0.64 ha in size. In comparison, the Permanent Growth Plot (PGP) protocol is a subset of the PSP protocol, which generates a much smaller plot. PGPs can be completed within one-day, and the smaller plot size allows them to be established over a wider range of conditions. Efforts to install new PGPs in co-operation with the Forest Ecosystem Science Co-operative were continued in 2002/03. An additional 474 PGPs were established across a range of conditions in the Boreal Forest. A total of 44 new plots were established in the Great Lakes- St. Lawrence Forest. Twelve new PSPs and 25 PGPs were also established north of the Area of the Undertaking as part of the Northern Boreal Initiative.

Another project funded through the Forestry Research Partnership (Tembec Industries Inc., the MNR, Canadian Forest Service, and the Canadian Ecology Centre) resulted in the establishment of a network of PGPs to measure the impact of single-tree selection harvesting of tolerant hardwood stands. These plots are similar to other PGPs, except they are 1,000 square metres instead of the standard 400 square metres. A manual was developed to standardize the assessment of these plots. During 2002/03, 45 of these plots were established under pre-harvest conditions, and the post-harvest assessment was completed on 63 plots (harvested during this season and the fall/winter previous).

Relocation, Maintenance, and Re-measurement of Existing Plots

The Growth and Yield Program continued the restructuring, updating and cleaning of the Provincial Growth and Yield Database. The sheer size of the provincial database makes this a significant maintenance activity. Efforts to improve the quality and reliability of the database are reflected in subsequent information products and models.

Five PSPs were measured in the Great Lakes-St. Lawrence forest in an effort to support the development of improved yield equations.

Modelling Projects

The Growth and Yield Program continued its investigation and development of a growth and yield-model called FVS$^{\text{ONTARIO}}$ (Forest Vegetation Simulator Ontario). The Growth and Yield Program worked with the Forestry Research Partnership (FRP) to validate this model for a range of forest types. Through this partnership, the Growth and Yield Program was also able to evaluate and begin calibration of the model for Great Lakes - St. Lawrence Forest types. The Growth and Yield Program also partnered with the FRP to continue developing benchmark yield curves for the forest management planning process. These curves are updated on an annual basis using data derived from Ontario's plot network.

The Growth and Yield Program also continued its development and transfer of Stand Density Management Diagram software, including the production of a new training module.

New Policies, Procedures, and Guidelines

Clearcut Restrictions (T&C #27(c))

MNR's *Forest Management Planning Manual for Ontario's Crown Forests* requires documentation for all planned clearcut areas by size class, and the rationale for any clearcut areas that exceed 260 hectares in size. These new reporting requirements began with the 1996/97 harvest year (but were reported in the following year in management unit annual reports). Provincial level reports were included for the first time with the 1998/1999 annual report. Results from these reports were included in the *State of the Forest Report, 2001* (Indicator 1.1.3).

Water Crossing Removal Criteria Development (T&C #52(e))

A committee of technical experts from the MNR, the Ministry of the Environment and Energy, and the forest industry developed a set of criteria for use in decisions on the removal of water crossing structures for roads destined for abandonment. The set of criteria, which addressed biological, engineering, water quality, and safety considerations, is outlined in an internal October 1997 document, "Criteria for the Removal of Water Crossings of Abandoned Roads".

Environmental Guidelines (T&C #94(b))

The MNR was required by the Timber Class EA approval to produce an implementation manual, an "Environmental Guideline for Timber Management Activities". This document was to provide direction regarding timber harvest layout, configuration, and clearcut sizes, and to address the protection of the physical environment in the course of forest harvest, renewal, and maintenance.

To meet this requirement, the MNR developed an implementation manual released in two parts: 1) protection of the physical environment and 2) timber harvest layout, configuration, and clearcut sizes.

Forest Management Guidelines for the Protection of the Physical Environment was published in December 1997 in response to the first part.

The MNR undertook background analysis of natural disturbance patterns in response to the second part. Also, as the result of a condition on the denial of a request for an individual Environmental Assessment on the 1999 Temagami Forest Management Plan (November 1999), the MNR was required by the Ministry of the Environment to produce a first draft of the "Forest Management Guidelines for the Emulation of Fire Disturbance Pattern" by September 30, 2000 and complete the final document by May 31, 2001. The deadline for the final document was later extended to November 30, 2001. A multidisciplinary writing team, with representatives from the MNR, the forest industry, and environmental organizations, was formed in December 1999 to begin writing the guide. As with other forest management guides, the Provincial Forest Technical Committee (a public advisory body) provided advice during the development of the guide.

The final document was published as the *Forest Management Guide for Natural Disturbance Pattern Emulation* on November 28, 2001. Transfer of the new guide to the MNR and the forest industry staff began immediately, and continued throughout the 2002/03 fiscal year. Direction in the guide was applied during the 2002 field season to those harvest blocks in the Temagami management unit that were the focus of the 1999 request for an individual Environmental Assessment. Planning teams developing forest management plans that would come into effect on April 1, 2003 began incorporating the stand level direction of the guide into their draft plans.

Guidelines for Pine Marten and Pileated Woodpecker Habitat (T&C #94(c))

The MNR was required by the Timber Class EA approval to develop two new documents: 1) *Forest Management Guidelines for the Provision of Marten Habitat* and 2) *Forest Management Guidelines for the Provision of Pileated Woodpecker Habitat*. As previously reported, both guides were completed in May 1996.

NATURAL DISTURBANCE PATTERN EMULATION

With the publication of the *Forest Management Guide for Natural Disturbance Pattern Emulation*, Ontario is improving its forest practices so that forest biodiversity and natural processes will be better maintained. This is being accomplished by emulating, as closely as possible, the forest conditions that are produced by forest fires.

The fundamental principle in emulating natural disturbance is to regenerate Ontario's forests in more natural patterns, ensuring the needs of wildlife species are met and that healthy, diverse ecosystems and their many benefits are passed on to future generations.

Northern Ontario Wetland Evaluation System (T&C #98)

As reported in the 1995/96 annual report, the requirement to develop a Northern Ontario Wetland Evaluation System has been delivered. The evaluation system was designed to allow a relative ranking of the importance of wetlands based on numerical scores assigned to biological, physical, and social attributes. Wetlands that are highly ranked are considered to be of provincial significance and are protected by wetlands policy. A system for evaluating wetlands in Southern Ontario has been in place since 1984. This system was modified for use in Northern Ontario. The *Ontario Wetland Evaluation System: Northern Manual* was published in March 1993, with a revised manual released in May 1994. The manual was revised and updated again in 2003.

In Northern Ontario, MNR district office staff assess whether planned forest operations have the potential to impact a wetland and decide whether to evaluate and rank these areas. If a wetland is identified as provincially significant, it is designated a value within the forest management planning process. Forest operations in wetland areas must be designed in accordance with AOC planning requirements. The publication of the northern wetlands manual, and the subsequent release of explanatory technical notes in 1995 and 1996, improved the use of the evaluation system. These tools enable forest management planning teams to identify wetlands on the basis of their ecological features, values, and functions.

The Ontario Wetland Evaluation System: Northern Manual is to be updated through work being conducted as part of the ELC Program (T&C #97), and will continue to be applied in forest management planning.

Old Growth Conservation Strategies (T&C #103(a))

The goal for old growth conservation is to ensure that old growth is maintained in the forest landscapes of Ontario now and into the future.

MNR released the *Draft Old Growth Forest Definitions for Ontario — a work in progress* report for public review and comment on March 28, 2002. The *Draft Old Growth Forest Definitions for Ontario — a work in progress* report describes old growth forest communities and tree species found across the province. The descriptions define old growth according to the age and length of time that older trees survive. The definitions are organized according to a provincial land classification that provides an understanding of associated soil, site conditions, plant community diversity, etc. When finalized, planners and resource managers will use the old growth definitions report to support Ontario's continuing efforts to maintain old growth in Crown forest landscapes across the province now and into the future.

As previously reported, in 1997 MNR released for public review and comment a draft old growth policy proposal called "A Conservation Strategy for Old Growth Forest Ecosystems on Crown Lands in Ontario". MNR resumed work on this draft old growth policy proposal in 2001, and on March 12, 2003 released for public review and comment a draft "Old Growth Policy for Ontario's Crown Forests".

Compared with the previous 1997 draft, this draft old growth policy proposal provides more details about:

- the events that have led up to the development of this policy;

- the principles for the conservation of old growth in Ontario's Crown forests;
- definitions for identifying old growth in Ontario's Crown forests;
- conserving old growth consistent with MNR policy direction and legal authority through approaches for natural heritage protection and forest management planning;
- a number of initiatives that will be pursued over the next five years to provide for the conservation of old growth in Ontario's forest landscapes; and,
- a schedule of activities required to support the application of this old growth policy in forest management planning.

The draft old growth policy proposes provincial direction for the identification and conservation of old growth conditions and values, for the major tree species and forest community associations present in Ontario's Crown forests. This draft provincial policy describes how MNR will ensure that old growth conditions and values are present in Ontario's Crown forests for conserving biological diversity at levels that maintain or restore ecological processes, while allowing for sustainable development now and in the future. The draft policy proposes that old growth conditions in Ontario's Crown forests be identified using the "age-of-onset" and "duration periods" for the forest communities defined in the *Draft Old Growth Forest Definitions for Ontario — a work in progress* report. The old growth policy also includes a conservation strategy that describes how MNR proposes to maintain old growth across Ontario's forest landscapes now and in the future. MNR intends to finalize the old growth policy and definitions report by May 2003.

Roadless Wilderness Areas Policy (T&C #106)

In May 1997, the MNR released Version 1.0 of a policy entitled *Ontario's Approach To Wilderness: A Policy*, as required by T&C #106. *Ontario's Approach To Wilderness: A Policy* states that wilderness values will be accounted for under the auspices of land-use planning and resource management planning, such as MNR's Ontario Living Legacy planning process, and under policy, legislation, and management programs developed in support of sustainable natural resource management in Ontario. *Ontario's Approach To Wilderness: A Policy* states that the MNR will engage in three specific initiatives. The MNR is currently working in the following areas to support these initiatives.

Identifying and establishing outstanding wilderness parks and wilderness zones

As stated in *Ontario's Living Legacy Land Use Strategy*, the MNR has concluded that the park class targets have been achieved to the extent possible within the Planning Area. Consideration will continue to be given to the park class targets in planning for the portions of ecoregions and ecodistricts that extend beyond the Land Use Strategy Planning Area. A planning and consultation process will be created to consider future suggestions for areas that may provide improved representation of natural heritage features. Any potential protected areas will be subject to broad public consultation through a formal planning process. Wilderness zones within park boundaries will be identified through parks management planning.

Continuing to work with partners and clients in order to protect wilderness values in Southern Ontario

Work is ongoing in Southern Ontario, and will be completed under the auspices of *Nature's Best, Ontario's Parks and Protected Areas: A Framework and Action Plan*. For example, the Ontario Parks/Nature Conservancy of Canada Land Acquisition Program (formerly Legacy 2000), the MNR/Nature Conservancy of Canada Community Conservancy Program, and the Natural Areas Protection Program are continuing to protect significant natural heritage values. Private land stewardship initiatives, such as the Conservation Land Tax Incentive Program, also contribute to the protection of significant values.

Identifying and defining the extent to which programs implemented on the intervening landscapes and waterscapes contribute to the maintenance and enhancement of wilderness characteristics

An internal working group was formed by the MNR to address the management of wilderness characteristics on the intervening landscapes, outside parks and other types of protected areas, and to determine if there are any changes required to existing resource management and operational planning guides. The working group, comprised of MNR staff, developed a draft discussion paper examining the extent to which programs implemented on the intervening landscapes and waterscapes contribute to the maintenance and enhancement of wilderness characteristics. This discussion paper is currently undergoing MNR review.

District Land Use Guidelines (T&C #110)

In 2001 the MNR initiated a major project to consolidate existing local land use direction for Crown lands from the *Ontario's Living Legacy Land Use Strategy*, District Land Use Guidelines, and special area plans. The objective was to develop a web-based *Crown Land Use Policy Atlas* that would provide easy access to all approved local land use policies, and proposed land use amendments. The Atlas was available for public inspection from December 2002 to April 2003. The public inspection provided an opportunity to verify that the land use direction (policies and maps) in the Atlas was an accurate consolidation of MNR's existing land use direction. Once necessary revisions are made, the *Crown Land Use Policy Atlas* will become the official source of local land use policies for Crown lands.

In 2002/03, one revision to the District Land Use Guidelines was approved, seven amendments to the area-specific policies in the Land Use Strategy were approved, and three area-specific amendments to the Land Use Strategy were initiated. Once the *Crown Land Use Policy Atlas* is confirmed as the official source of land use direction, only the Atlas will be updated through land use amendments.

New Forest Management Methods, Models, and Tools

Tending and Protection Improvement Programs (T&C #102)

The MNR has several ongoing projects related to pest management (insects and diseases) and vegetation management. Either on its own, or in partnership with other provinces and the private sector, the MNR has funded a number of research projects in these two areas.

Pest Management

No report was submitted for 2002/03.

Vegetation Management Alternatives

Since 1991, the focus of the Vegetation Management Alternatives Program (VMAP) has been to reduce dependence on herbicides in Ontario's forests by developing effective, safe, and economically-viable alternatives. This has been accomplished through basic and applied research, education, and field delivery: In 2002, the following projects were undertaken:

- maintaining ongoing partnerships with the Canadian Forest Service, academic institutions, forest industry, and non-government organizations (Upper Lakes Environmental Research Network and Forest Engineering Research Institute of Canada) to ensure the continuation of established trials and the initiation of new trials;
- initiating the NEBIE Project to compare the effects of natural forest disturbance with a range of silvicultural intensities throughout the boreal and Great Lakes-St. Lawrence forests of Ontario. *NEBIE* stands for natural disturbance, extensive, basic, intensive, and elite. *Natural disturbance* is at one end of the spectrum and involves no management activities. *Elite*, at the other end of the spectrum, involves a full suite of intensive management activities designed to increase timber yields. NEBIE plots were installed and data collected at Sioux Lookout, Dryden, Wawa and Timmins. Data collected in-

cluded information on timber, plant species diversity, soils, and pathogens;

- reassessment of three longer-term vegetation management treatment studies (Glyphosate Studies in the Northeast, Bending Lake, and Intensive Site Preparation Study);
- publication of research results in the Canadian Journal of Forest Research, Silva Fennica and Remote Sensing and the Environment;
- continuing to work on the "Guide to Opportunities" (a series of notes on vegetation management alternatives) and the "Plant Autecology Guide" (a series of notes on common forest plants of Ontario);
- continuing to establish and assess the "White Pine Competition Study and Demonstration" and preparation of an establishment report; and
- providing support to the Forestry Research Partnership to create a web site to transfer vegetation management research results.

Socio-Economic Analysis (T&C #104)

As identified in the 1995/96 annual report, a Socio-Economic Impact Model (SEIM) has been developed by the MNR to help determine the economic and social impacts of non-timber values and alternative forest management scenarios in forest management planning.

Training on the model is ongoing with forest management planning teams, and the model is updated as required. SEIM is continually updated as Statistics Canada revises the underlying input/output database, and newer Census of Population information becomes available. The most current version, SEIM2000, measures impacts using ecological regions, the MNR's district boundaries, and results from the 2001 Census of Population.

Socio-economic impact analysis is fully operational in the forest management planning process. During the development of each Forest Management Plan, the advantages and disadvantages of management alternatives are assessed using SEIM.

A variety of research initiatives focusing on non-market valuation techniques and their applicability in Ontario have also been sponsored and assisted by the MNR. These initiatives built upon a series of reports completed and published under the MNR's Forest Values project. A diverse range of methods and issues were examined, including the effects of congestion on a recreational experience, net economic benefit from canoeing in Ontario, social values of wilderness areas, and economic value of big game hunting.

The MNR has also undertaken internal investigations, and has developed a methodology to determine non-timber values from existing administrative records. Results from the investigation of non-timber values have been used by the MNR to support land-use decisions, including support provided for the development of *Ontario's Living Legacy Land Use Strategy*.

MNR, together with other members of Forest Research Partnership (FRP), continues to invest in the development of a framework for analyzing the private sector business case for financing forest management activities on provincial Crown Lands. This project is rooted in the implementation of the 1999 *Ontario Forest Accord - A Foundation for Progress*, that identified intensified forest management activities as a mechanism for mitigating the supply impacts on the forest industry associated with the implementation of Ontario's Living Legacy. As a result, a new analytical computer tool was developed for conducting qualitative business case and business risk analyses of specific investments related to intensified forest management.

Strategic Forest Management Model

The Strategic Forest Management Model (SFMM) is used in Ontario to explore forest management strategies and options and to evaluate potential resource benefits, including available supplies of wood products, areas of potential wildlife habitat, and measures of forest diversity. It is used by the MNR to help model and project the development of Ontario's forests through time, in light of natural forest dynamics and the effects of human intervention. SFMM can be used to project the future forest condition, forest dynamics, available wood supply, potential wildlife habitat, and forest diversity through time horizons of 150 to 200 years.

It is used widely by the MNR and other forest resource organizations, including consultants and forest products companies. It is the core tool used by forest management planning teams to develop management alternatives, including the Available Harvest Area. This model is also used to support other areas of business such as land-use planning and regional wood supply strategies.

The MNR continues to maintain and develop the features of SFMM in response to users' analysis needs. In the past year, maintenance releases of SFMM have been made available to users. Support for users of SFMM is provided through a website and training courses. In 2002/03, the SFMM user training was redesigned to include a SFMM Basic and an Advanced Analysis course.

Biodiversity Assessment, Landscape Management, and Wildlife Habitat Supply Modelling (T&C #107)

T&C #107 required MNR to examine wildlife habitat supply modelling methodologies and landscape management methodologies as potential means of addressing biological diversity concerns. The Environmental Assessment Board recognized rapid advancements were occurring in both computer modelling capabilities and methodologies which had potential to answer concerns about biodiversity.

Landscape Ecology

The Forest Landscape Ecology Program continues to assess the effects of natural change and human activity on biodiversity and forest sustainability at the landscape level. The Forest Landscape Ecology Program accomplished the following in 2002/03 fiscal year:

Boreal Forest Landscape Dynamics Simulator (BFOLDS) The development work continued on BFOLDS, a raster-based, spatially-explicit, and stochastic model, which predicts landscape-scale fire disturbance regime and subsequent forest cover change over long time periods (>200 years) and large areas (> 3 million ha). Spatial databases needed to implement BFOLDS were assembled, which included forest cover, soil, terrain, climate, and historical disturbances. BFOLDS was used in several simulation studies of boreal forest landscape disturbances, to determine spatial patterns of aging potential as a case study to demonstrate the simulation modelling approach to understanding old growth forest potential in northern Ontario landscapes. An oral presentation and a poster was delivered at the Ecological Society of America annual meeting on BFOLDS simulation research.

Boreal Vegetation Transition Matrix Further development work continued on the Boreal Vegetation Transition Matrix version 1.0, a raster-based, spatially-explicit, and stochastic model, which predicts the forest succession in boreal forest at landscape scales (as a part of BFOLDS). A research project is underway to improve the Boreal Vegetation Transition Matrix by creating a spatial-bias module to eliminate random noise in predictions. This project produced a Masters graduate thesis (University of Toronto), a journal manuscript, and a presentation at the International Union of Forest Research meeting on forest landscape ecology. The compilation of a spatial database of forest cover chronosequence continued.

Emulating Natural Forest Disturbances An international science symposium was held in Sault Ste. Marie in May 2002, with over 200 Canadian and international scientists, forest practitioners, policy makers and NGOs participating. Over 60 speakers gave presentations on various aspects of the concepts and applications of this topic. The goal was to generate a broad and rigorous science foundation to the directions from the *Crown Forest Sustainability Act* of emulating natural forest disturbances. A Forest Research Information Paper was published which included summaries of presentations from this symposium. The complete proceedings of the symposium will also provide information for the forest management landscape guide, which is being developed by the Forest Policy Section.

A special session was also organized at a Great Lakes Forest Alliance meeting in Wisconsin to address the topic of emulating forest disturbances. This session included speakers from MNR, the US Forest Service, the US Argonne National Laboratory, and the Canadian Forest Service. Two posters and two oral presentations were delivered on natural disturbance modeling in Ontario at this meeting.

Net Primary Productivity Assessment System

The development and testing of the Net Primary Productivity Assessment System continued in 2002/03. New additions were made to include high resolution radiometer data in modelling net primary productivity. The goal is to provide a rapid and inexpensive monitoring method of net primary productivity at sub-regional scales, in support of the MNR's forest management planning process.

Wildlife Habitat Supply Analysis

Wildlife habitat supply modelling investigation and development work continued in 2002/03. The Ontario Wildlife Habitat Assessment Model (OWHAM) includes spatial models for moose, deer, pileated woodpeckers, and red-shouldered hawks for the Great Lakes-St. Lawrence Forest region and models for marten in both the Boreal East and the Great Lakes-St. Lawrence Forest regions. This model is used to assist in the implementation of the pileated woodpecker and marten guides in the Great Lakes-St. Lawrence and Boreal East Forest regions. Work has also continued on Marten Analyst to be used in the application of the marten habitat guide in the Boreal West Forest region. A combined habitat and population model for marten has been acquired and is being tested in support of the eventual evaluation and revision of the marten habitat guide.

A spatial allocation model (STANLEY) for use with SFMM is under development and evaluation. The nonspatial wildlife habitat relationships models (used in SFMM) for the Boreal East and Great Lakes-St. Lawrence Forest regions are being revised based on increased availability of empirical data.

Multiscale, spatially-explicit habitat models are being developed for moose, caribou, and forest songbirds, using the newly-developed spatial modelling language (LSL). These models will also be used to assess natural disturbance patterns so that landscape patterns created by forest harvesting will better match those of natural disturbance patterns. The research will define "spatial signatures" representing various types of natural disturbance.

Alternative forest habitat classifications to "Habitat Units" are being examined in the experimental studies. The alternatives include aggregates of ecosites into vegetation groups (V-groups) and standardized Forest Units, classed by seral stage. This work is conducted under T&C #80 (Landscape Analysis of Wildlife Habitat). Study areas include the Cochrane and Iroquois Falls forests (forest birds) in Northeastern Ontario, and the Black Sturgeon and Spruce River forests (forest birds), Wabigoon Forest (moose), and Lac Seul Forest (caribou) in Northwestern Ontario.

Geographic Information Systems (T&C #108)

Geographic Information Systems (GIS) are designed to aid in the capture, storage, organization, analysis, and presentation of complex geographic data using computer systems. They are essential for the full development of modern resource management methods, models, and tools.

In 1994, the MNR selected a GIS software standard. This GIS has been installed in all MNR district and area offices. As well, systems are installed in regional offices, science units, research units, and systems development units. Systems, software, and technical training have been provided.

The Natural Resource & Values Information System (NRVIS) is the Ontario Ministry of Natural Resources (OMNR) standardized data management system for its land related geographic information (both tabular and spatial). A major revision (NRVIS 3.0), due to be implemented in 2003, will greatly improve access to and use of the system.

NRVIS incorporates spatial and tabular standards for over 200 data classes, designed to meet a wide range of natural resource management activities. The main function of NRVIS is to enforce these standards and business rules around geospatial data. Imbedded within NRVIS are functions related to updating, query, browse and mapping of spatial data. Data types supported in NRVIS include fisheries, wildlife, cultural & natural heritage, land tenure, administrative boundaries, traditional land use, tourism, wetlands and infrastructure. NRVIS or NRVIS lite continues to be used to produce standardized values maps for all Forest Management Plans.

The release of NRVIS used in 2002/03 (2.1.4) was in production in a distributed environment in 26 field offices. NRVIS 3.0 will run from a central location, accessed throughout the province via the intranet. The application will be served using citrix via a web browser, enabling use from any location with access to the OPS Wide Area Network. Users will not require powerful desktop machines or specialized GIS software to use NRVIS. The new system will be built on current technology including ESRI's Arcgis, SDE and the geodatabase and Oracle.

The new system will be much faster and user friendly than the 2.1.4 version and will allow access to the entire province's data from any networked location. New data classes are being added that expand the use of NRVIS to other Ontario ministries, such as Soils from the Ministry of Agriculture and Food. It is anticipated that over time this new system will expand its use broadly through the Ontario Public Service.

Long-Term Monitoring Programs and Scientific Studies

Provincial Wildlife Population Monitoring (T&C #81)

Provincial wildlife population monitoring is undertaken to demonstrate that healthy populations of forest wildlife continue to occur across the Area of the Undertaking and to contribute to an understanding of how forest management affects wildlife populations. Wildlife population monitoring under T&C #81 of the Timber Class EA approval was initiated in 1995 through partnerships with other monitoring agencies, and in 1996 MNR established the Wildlife Assessment Program, staffing three locations in North Bay, Timmins, and Thunder Bay. Under the direction of the Provincial Terrestrial Assessment Program, during 2002/03 it maintained these monitoring partnerships with external parties and continued to implement its monitoring approach across the Area of the Undertaking.

Wildlife Assessment partnership activities included ongoing support for Bird Studies Canada (BSC), to monitor forest bird migration, owls, and red shouldered hawks, as well as support for the University of Guelph's long-term small-mammal monitoring in Algonquin Park. By contributing data, support was also continued for the second *Ontario Breeding Bird Atlas*. The Wildlife Assessment Program continued its participation (initiated in 2001) in a project lead by the Canadian Forest Service to develop local level bio-indicators of sustainable forest management.

The Wildlife Assessment Program increased the number of field plots established, and began formal three-year pilot studies on small mammals, forest birds and amphibians across a network of 180 randomly-selected, geographically-distributed, permanent sample sites representative of major forest types. The purpose of these pilot studies is to evaluate this type of monitoring survey across broad geographic regions of Ontario. The intent is to implement full-scale surveys that will provide results for the selected species groups that are representative of the areas monitored.

Protocols for standardized surveys of forest birds and small mammals were developed to complement the salamander protocol published in 2001/02. The furbearer distribution and relative abundance trapper mail survey was also continued. In 2002 program staff began preparing a summary and assessment of its first five-years' activities (1997 – 2001). Staff also initiated a review to examine the program's direction, priorities, and approaches.

In 2002/03 the Wildlife Assessment Program, through the Provincial Terrestrial Assessment Program, worked to maintain a central database as a repository for program data, and provide other researchers the opportunity of accessing and sharing this data.

Long-Term Scientific Studies (T&C #80)

Tourism Effects Research

This study is designed to assess the effectiveness of the provincial *Timber Management Guidelines for the Protection of Tourism Values*, to determine the effects of forest management on tourism values, and to recommend improvements to the guide[8]. The major initiatives of this study for 2002/03 are summarized below:

- work on the comparative economic resource-based tourism project proceeded towards completion. This project has focused on determining whether the revenues generated by operators of resource-based tourism establishments catering to anglers are affected by the presence and extent of forest harvesting;
- the model for the road-accessible tourism establishments was completed in 2002/03; and,
- a project was initiated to understand how the provision and quality of roads affects the fishing site choices of recreational anglers. This project should provide a good deal of useful information, including an assessment of the effectiveness of natural road abandonment strategies in protecting resource-based tourism values. To date the project has collected detailed information concerning access points in the Thunder Bay and Wawa areas.

Moose Guidelines Evaluation

This project is assessing the effectiveness of *Ontario's Timber Management Guidelines for the Provision of Moose Habitat*, will assess the effects of current forest management practices on moose and other wildlife habitat, and recommend improvements to the guidelines. The following activities were carried out in 2002/03:

- location data from GPS collars deployed on 128 cow moose during the January 1995 to January 2001 period (more than 1 million data points in 35,000 separate files) were checked for errors in preparation for analyzing movements, home ranges, and habitat use by moose;
- continued the analysis of body measurements and condition scores, ultrasound measurements of back fat, blood, hair and fecal samples in conjunction with a M.Sc. thesis on the relationship between moose condition and habitat use;
- a study comparing moose use of aquatic feeding areas among 3 timber harvesting systems in the Great Lakes - St. Lawrence forest was continued by a graduate student in the Department of Biology, Lakehead University;
- a study of habitat patches used by moose within their home ranges was initiated by a graduate student in the Department of Biology, Lakehead University; and,
- a comparison of home range calculation software and methods of analysis for GPS-collar data, particularly bandwidth selection methods, was undertaken.

Landscape Analysis of Wildlife Habitat

This research program is examining the effects of the *Timber Management Guidelines for the Provision of Moose Habitat* and other forest management practices, on wildlife populations and habitat. The research was initially restricted to moose, but since it was linked with T&C #107, it now also examines the effects of spatial patterns created by dispersed block cutting (moose guide) versus aggregated cutting (fire emulation guide).

The focus of the research is on characterizing the effects of logging on habitat patch size and configuration, and on developing predictive models of how changes in landscape configuration influence the quality of wildlife habitat. An important component of this research is comparing landscape patterns created through logging with those created by natural disturbance processes.

A multi-scale, habitat-modelling tool (LSL/CPAT) is being developed to facilitate spatially-explicit habitat modelling, and evaluate other spatial objectives, as defined in Forest Management Plans. This computer program, when completed and tested, could assist in implementing new directions in both the moose habitat guide and in the emulation of natural fire disturbance patterns.

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[8] These guidelines were revised and released as *Management Guidelines for Forestry and Resource-Based Tourism* in July, 2001.

Field work to develop and test spatial models is now entering its third year, with this year's work focused on testing models developed on data collected earlier. Two study sites have been established: the Cochrane and Iroquois Falls forests (Northeastern Ontario), and the Black Sturgeon and Spruce River forests (Northwestern Ontario). The CVX microphone system is being used to facilitate rapid collection of songbird biodiversity data. This project, in collaboration with the Wildlife Assessment Program, receives in-kind support from the Forest Fire Management Program and the Cochrane District.

Two other important collaborative studies have been initiated through the OLL program. A study of breeding birds in the Red Lake Forest is assessing whether the marten habitat guide will provide sufficient direction to conserve forest songbirds. Another project is studying the effects of forest management on breeding songbirds in Northern Ontario. Both studies will use the CVX microphone system, and follow similar data collection protocols, with the objective of sharing data among research programs.

Aquatic Effects Research

These long-term scientific studies are designed to determine the effectiveness of the provincial *Timber Management Guidelines for the Protection of Fish Habitat*, with an emphasis on the numerical measurement and modelling of land-use effects on aquatic ecosystems in Northern Ontario. To date, aquatic effects research has been addressed through two integrated projects: the Coldwater Lakes Experimental Watersheds and the Comparative Aquatic Effects Program.

The Coldwater Lakes Study was initiated northwest of Atikokan in 1990, to experimentally evaluate the effects of logging on lake ecosystems and to provide information about the effectiveness of shoreline reserves in preventing those effects. Five years of intensive pre-harvest monitoring (1991-1995) was followed by extensive experimental logging in 1996 (large cuts) and 1998 (secondary cuts), and four years of post-harvest monitoring (1997-2001). Minor to moderate aquatic impacts, similar to those caused by wildfire, were observed in the three impacted lakes. These effects are associated primarily with increased groundwater yield after the forest trees are removed, and are noted through temporary increases in nitrogen, potassium, and dissolved organic carbon in lake water, which temporarily decreases water clarity and increases lake productivity.

The Comparative Aquatic Effects Program began in 1995 to document the impacts of forest management activities on stream ecosystems in Ontario's Boreal Forest, and to test the effectiveness of current forest management guides on preventing or minimizing these effects. To date, the program has focused on measuring timber-harvest impacts on coldwater streams, since coldwater stream habitat and biota are expected to be relatively sensitive to disturbance in the surrounding catchment. The program is investigating a number of areas, including the key aquatic habitat variables, to monitor the effects of timber harvest, the spatial scale of harvest impacts on aquatic ecosystems, the use of buffer strips to prevent sediment from moving overland and into waterways, the effects of logging roads as barriers to fish migration, and the development of GIS-based tools to predict the location of small, unmapped streams that may serve as fish habitat.

These and other early results (many now published in primary scientific literature) suggest that the widespread use of shoreline reserves under the 1988 *Timber Management Guidelines for the Protection of Fish Habitat* and accompanying policy may be conservative in some respects if roads and water crossings are correctly planned and constructed. It is likely that some shoreline forest reserves may be safely harvested and regenerated without harm to aquatic habitat or water quality, as part of a landscape-scale forest disturbance plan. An extensive, collaborative research program among MNR, industry, and university personnel is underway to monitor shoreline forest management and to test the reliability of previous studies and their relevance to other areas of Northern Ontario.

Full-Tree Harvesting and Long-Term Site Productivity (T&C #101)

This project was established in 1993 to provide a quantitative assessment of the effects of full-tree harvesting and full-tree chipping on ecosystem processes, which ultimately may influence site productivity, for a range of black spruce-dominated ecosites. A companion study, headed by the Canadian Forest Service, is being conducted on jack pine. A total of nine core study sites, three harvested in 1994 and six in 1995, were included in the experimental harvest component of MNR's black spruce project.

In 2002/03, field and laboratory work focused on the eighth-year measurement for six sites experimentally-harvested in 1995. These measurements were designed to quantify changes in soil physical (e.g., bulk density, porosity), chemical (e.g., pH, carbon and macronutrient reserves, available nutrients and leaching potential), and biological (e.g., microbial biomass) properties resulting from the harvest treatments over the range of site types being examined. In addition, seedling growth (e.g., total height and increment, root collar diameter) and nutrition (e.g., foliar chemistry, plant nutrient uptake) measurements were taken to examine trends in early seedling performance.

In addition to the core work being done as part of the T&C #101 project, a short-term soil quality monitoring program was developed by partners from MNR and the forest industry to collect scientific data from operationally-harvested, very shallow soil (<20cm) sites, to review the current recommendation that these sites should not be harvested using the full-tree harvesting method. The monitoring program consists of detailed, repeated (pre- and post-harvest) soil and vegetation surveys on a series of (4 in total) Level I Case Study Sites (consisting of both full-tree and tree-length treatment blocks), as well as 99 Level II post-harvest surveys. The Level II plots were designed to act as permanent growth plots as part of the forest industry's commitment to growth and yield monitoring. The MNR and five forest industry partners have committed over $300K for the first phase of the program, which is scheduled to be completed by the end of 2004.

Appendices

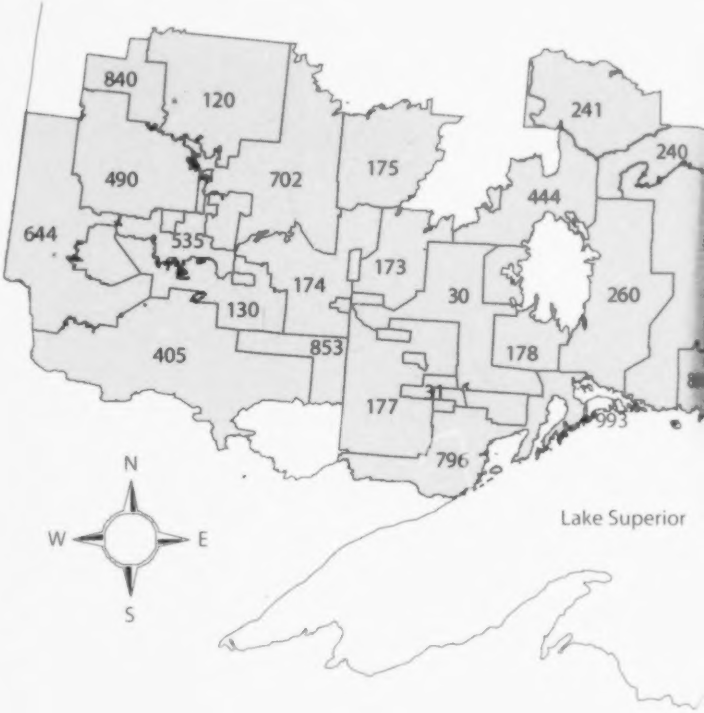
Appendix 1	Key to Management Units (April 1, 2002) (designated under the Crown Forest Sustainability Act, Section 7)
Appendix 2	Total Provincial Area by Satellite and Forest Resources Inventory Classifications, 2001 (all areas in thousands of hectares).
Appendix 3	Forest Management Plans Approved for Implementation in 2002, and Plans Scheduled for Approval and Implementation in 2003, 2004, and 2005.
Appendix 4	Forest-dependent Communities in Ontario (ranked by percentage of forestry workers).
Appendix 5	Forest Renewal Charges for 2002/03 ($ per cubic metre).
Appendix 6	Acronyms Used in this Report.
Appendix 7	Documents referenced in this Report.

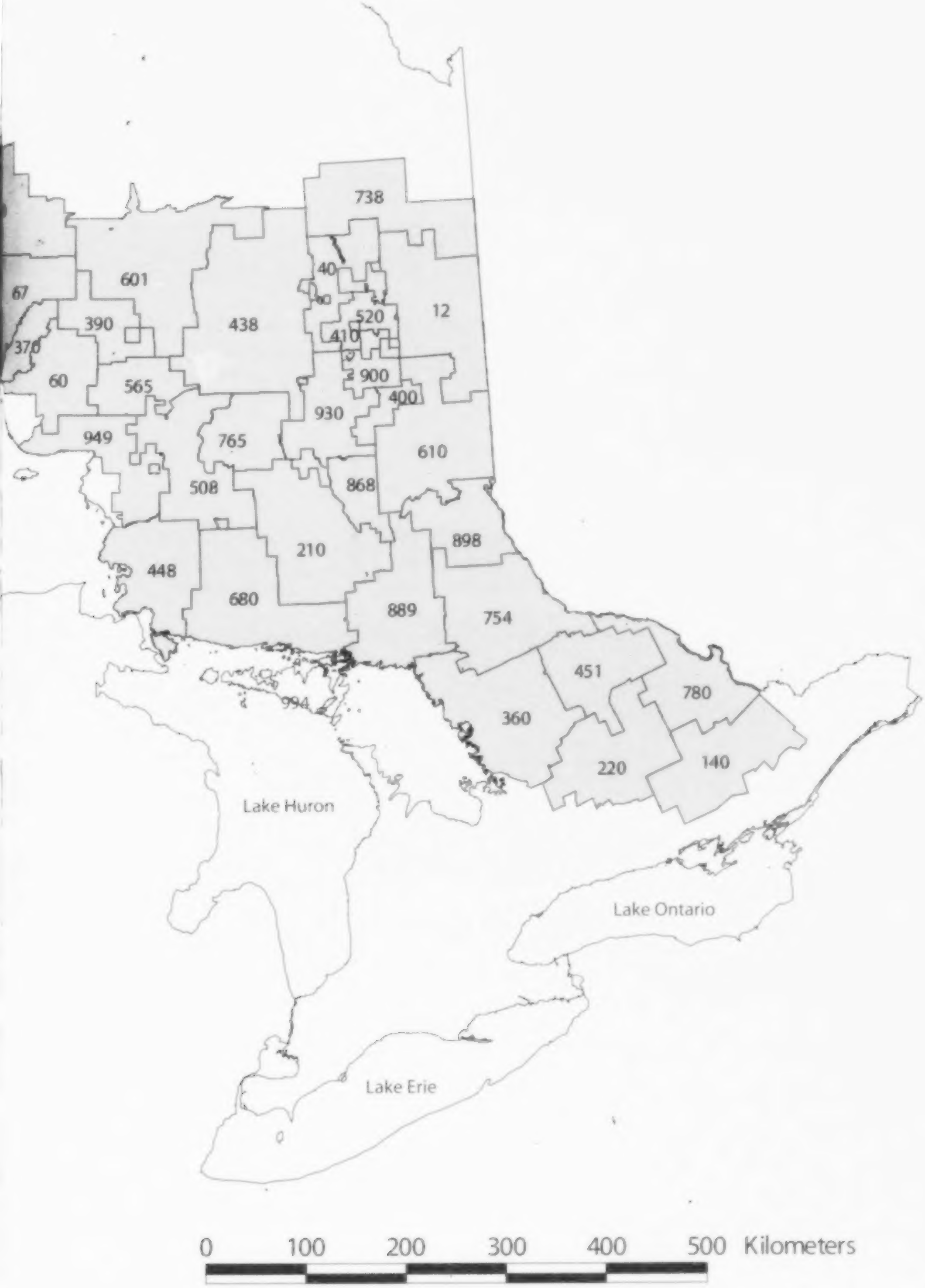
Appendix 1 Key to Management Units (April 1, 2002) (designated under the Crown Forest Sustainability Act, Section 7)

MNR Region	MU #	Management Unit Name	Status[1]
Northwest	444	Armstrong Forest	SFL
	178	Black Sturgeon Forest	SFL
	173	Brightsand Forest	SFL
	175	Caribou Forest	SFL
	405	Crossroute Forest	SFL
	177	Dog River-Matawin Forest	SFL
	535	Dryden Forest	SFL
	174	English River Forest	SFL
	350	Kenogami Forest	SFL
	644	Kenora	SFL
	702	Lac Seul Forest	SFL
	260	Lake Nipigon Forest	SFL
	796	Lakehead Forest	SFL
	240	Nakina North Forest	SFL
	241	Ogoki Forest	SFL
	851	Pic River Ojibway Forest	SFL
	840	Red Lake Forest	SFL
	853	Sapawe Forest	SFL
	030	Spruce River Forest	SFL
	120	Trout Lake Forest	SFL
	130	Wabigoon Forest	SFL
	490	Whiskey Jack Forest	SFL
Northeast	448	Algoma Forest	SFL
	067	Big Pic Forest	SFL
	370	Black River Forest	SFL
	520	Cochrane	CR
	410	Driftwood Forest	SFL
	438	Gordon Cosens Forest	SFL
	601	Hearst Forest	SFL
	012	Iroquois Falls Forest	SFL
	565	Magpie Forest	SFL
	738	Moose River	CR
	390	Nagagami Forest	SFL
	754	Nipissing Forest	SFL
	680	Northshore Forest	SFL
	765	Pineland-Martel Forest	SFL
	930	Romeo Malette Forest	SFL
	868	Shiningtree Forest	SFL
	040	Smooth Rock Falls Forest	SFL
	210	Spanish Forest	SFL
	889	Sudbury Forest	SFL
	508	Superior Forest	SFL
	898	Temagami	CR
	610	Timiskaming Forest	SFL
	900	Timmins	SFL
	400	Timmins Forest	SFL
	949	Wawa Forest	SFL
	060	White River Forest	SFL
Southern	451	Algonquin Park Forest	AFA
	220	Bancroft-Minden Forest	SFL
	360	French-Severn Forest	SFL
	140	Mazinaw-Lanark Forest	SFL
	780	Ottawa Valley Forest	SFL
	990	Southern Ontario[2]	CR

[1] Status - Forest Management Planning Responsibility
SFL - Sustainable Forest Licence
CR - Crown
AFA - Algonquin Forest Authority

[2] Southern Ontario (MU # 990) is south of the AOU

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Produced by: Forest Evaluation & Standards Section – Forest Management Branch

Appendix 1 Key to Management Units (April 1, 2002) (designated under the Crown Forest Sustainability Act, Section 7)

MNR Region	MU #	Management Unit Name	Status
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	851	Pic River Ojibway Forest	SFL
	840	Red Lake Forest	SFL
	853	Sapawe Forest	SFL
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	120	Trout Lake Forest	SFL
	130	Wabigoon Forest	SFL
	490	Whiskey Jack Forest	SFL
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	067	Big Pic Forest	SFL
	370	Black River Forest	SFL
	520	Cochrane	CR
	410	Driftwood Forest	SFL
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	868	Shiningtree Forest	SFL
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	210	Spanish Forest	SFL
	889	Sudbury Forest	SFL
	508	Superior Forest	SFL
	898	Temagami	CR
	610	Timiskaming Forest	SFL
	900	Timmins	SFL
	400	Timmins Forest	SFL
	949	Wawa Forest	SFL
	060	White River Forest	SFL
Southern	451	Algonquin Park Forest	AFA
	220	Bancroft-Minden Forest	SFL
	360	French-Severn Forest	SFL
	140	Mazinaw-Lanark Forest	SFL
	780	Ottawa Valley Forest	SFL
	990	Southern Ontario[1]	CR

Status - Forest Management Planning Responsibility
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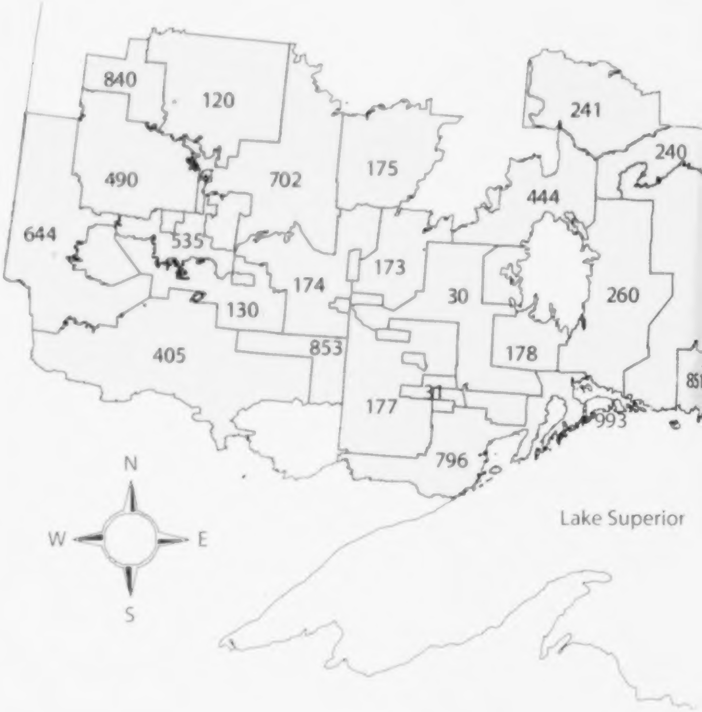

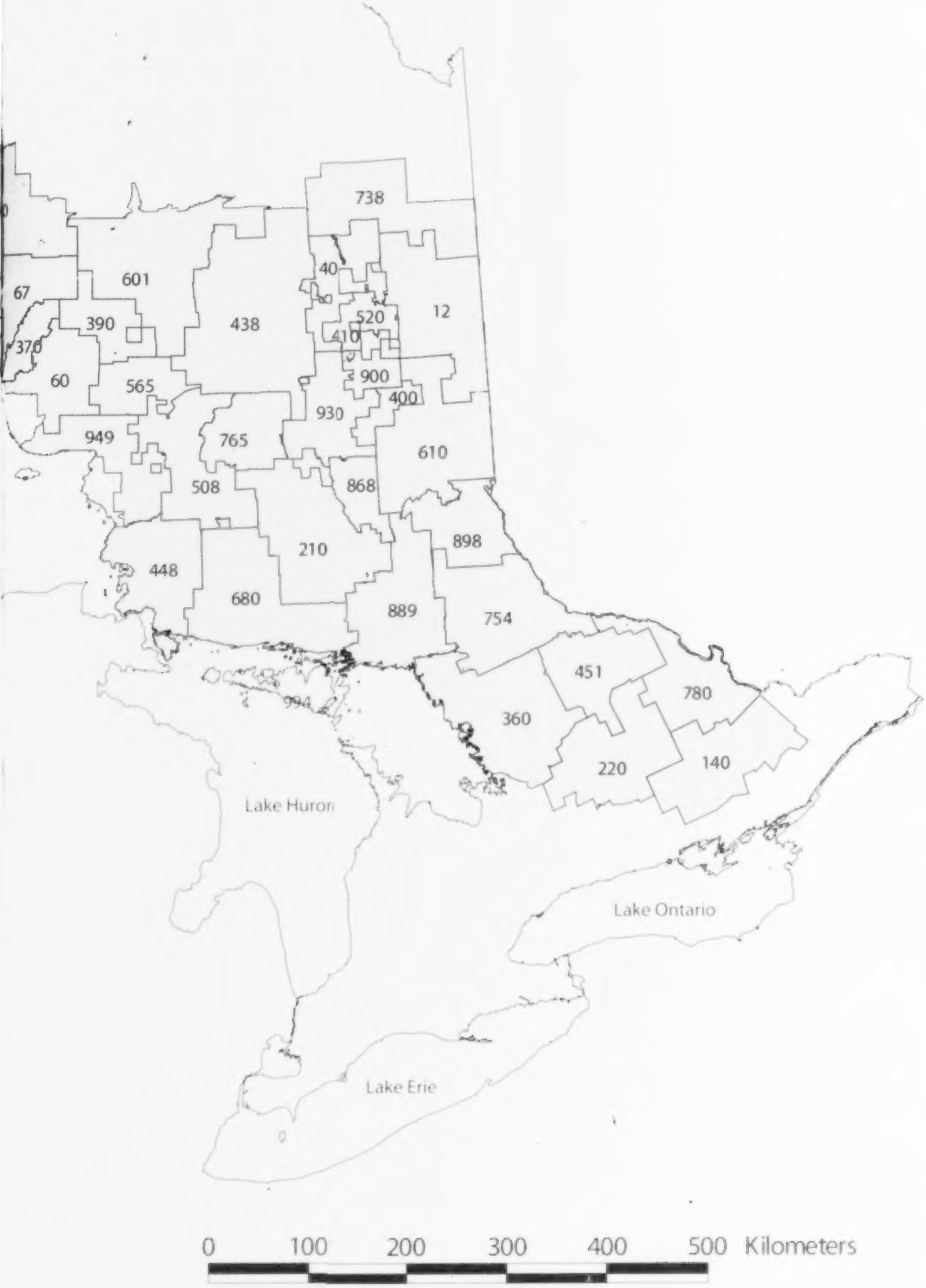
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Produced by: Forest Evaluation & Standards Section - Forest Management Branch

Appendix 2 Total Provincial Area by Satellite and Forest Resources Inventory Classifications, 2001 (all areas in thousands of hectares)

	Total Provincial Area - Satellite Classes				Total Inventoried Area - FRI				Total - Planning Area - FRI			
Land Class	**Crown**	**Parks**	**Other**	**Total**	**Crown**	**Parks**	**Other**	**Total**	**Crown**	**Parks**	**Other**	**Total**
Forested Land												
Productive Forest	44,401.4	4,962.8	6,371.8	55,736	30,010.2	4,109.9	6,071.2	40,191.3	25,582.5	3,941.4	4,159.1	33,683.0
Non-Productive Forested Land												
Wetland/ Open Muskeg [1]	9,693.0	1,398.9	70.8	11,162.7	885.9	149.4	246.8	1,282.1	785.6	139.5	180.9	1,106.0
Treed Muskeg [2]	13,360.1	1,001.6	393.8	14,755.5	2,229.8	270.9	99.1	2,599.9	1,161.7	223.6	80.0	1,465.3
Tundra	25.7	33.0	0.0	58.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brush & Alder [3]	n/a	n/a	n/a	n/a	903.3	99.1	237.0	1,239.4	727.1	92.8	164.9	984.9
Rock	294.6	98.4	127.8	520.8	266.9	118.9	100.9	486.7	228.2	118.0	91.7	437.9
Subtotal non-productive forested	23,373.3	2,531.9	592.4	26,497.7	4,286.0	638.3	683.8	5,608.1	2,902.8	573.9	517.4	3,994.1
Non-Forested Land												
Developed Agricultural Land	8.3	3.5	4,454.0	4,465.8	14.7	1.1	3,925.8	3,941.7	2.8	0.3	418.2	421.4
Grass & Meadow	121.0	3.3	1,268.3	1,392.6	13.1	1.3	858.9	873.3	6.1	0.4	222.1	228.6
Unclassified Land	129.2	9.0	438.6	576.8	366.2	25.3	938.2	1,329.7	359.2	21.5	249.6	630.3
Sub-total:	258.4	15.8	6,161.0	6,435.2	394.0	27.7	5,722.8	6,144.6	368.1	22.3	889.9	1,280.3
Water	8,199.7	1,476.8	359.3	10,035.9	6,755.3	924.4	21.6	7,701.3	5,433.4	888.1	20.7	6,342.3
Water (Great Lakes)	8,886.9	0.0	0.0	8,886.9	1,082.0	45.5	2.4	1,129.9	0.0	0.0	0.0	0.0
All Water	17,086.6	1,476.8	359.3	18,922.8	7,837.3	969.9	24.0	8,831.3	5,433.4	888.1	20.7	6,342.3
Grand Total:	**85,119.8**	**8,987.3**	**13,484.5**	**107,591.7**	**42,527.6**	**5,745.8**	**12,501.9**	**60,775.3**	**34,286.8**	**5,425.7**	**5,587.2**	**45,299.7**

[1] Includes "Wetland" satellite class

[2] Includes "Treed Bog & Fen" and "Swamp" satellite classes

[3] Not available as satellite class

Appendix 3 Forest Management Plans Approved for Implementation in 2002, and Plans Scheduled for Approval and Implementation in 2003, 2004, and 2005

Plans Approved for Implementation in 2002

Management Unit Name (current or proposed)	MU#	District	Remarks
Big Pic Forest	067	Wawa	
Caribou Forest	175	Sioux Lookout	
Crossroute Forest	405	Fort Frances	Highrock Forest (290) and Fort Frances-Flanders Forest (827) to be amalgamated
Hearst Forest	601	Hearst	Scheduled for early approval in 2001, implementation in 2002
Lakehead Forest	796	Thunder Bay	
Romeo Malette Forest	930	Timmins	Scheduled for early approval in 2001, implementation in 2002

Plans Scheduled for Approval and Implementation in 2003

Management Unit Name (current or proposed)	MU#	District	Remarks
Cochrane-Moose River	520/738	Cochrane	Cochrane (520) and Moose River (738) to be amalgamated (new MU # is 375)
Nighthawk Forest	410/400/900	Timmins	Driftwood Forest (410), Timmins Forest (400) and Timmins (900) to be amalgamated (new MU # is 150)
Ogoki Forest	240/241	Nipigon	Nakina North Forest (240) and Ogoki Forest (241) to be amalgamated (new MU # is 415)
Red Lake Forest	840	Red Lake	
Wabigoon Forest	130	Dryden	
White River Forest	060	Wawa	

Plans Scheduled for Approval and Implementation in 2004

Management Unit Name (current or proposed)	MU#	District	Remarks
English River Forest	173/174	Dryden	English River Forest (174) and Brightsand Forest (173) to be amalgamated (new MU # is 230)
French-Severn Forest	360	Parry Sound	
Magpie Forest	565	Wawa	
Nipissing Forest	754	North Bay	
Temagami	898	North Bay	
Trout Lake Forest	120	Red Lake	
Whiskey Jack Forest	490	Kenora	

Plans Commencing Preparation in 2003 for Approval and Implementation in 2005

Management Unit Name (current or proposed)	MU#	District	Invitation to Participate – Tentative Date and Remarks
Algoma Forest	448/949	Sault Ste. Marie	February 2003, Algoma Forest (448) and Wawa Forest (949) to be amalgamated.
Algonquin Park Forest	451	Algonquin Park	April 2003
Armstrong Forest	444	Thunder Bay	February 2003
Dog River-Matawin Forest	177	Thunder Bay	February 2003
Gordon Cosens Forest	438	Hearst	February 2003
Iroquois Falls Forest	12	Cochrane	February 2003
Kenogami Forest	350	Nipigon	February 2003
Northshore Forest	680	Sault Ste. Marie	February 2003
Sapawe Forest	853	Fort Frances	February 2003
Smooth Rock Falls Forest	40	Cochrane	February 2003
Spanish Forest	210	Sudbury	February 2003
Sudbury Forest	889	Sudbury	February 2003

Appendix 4 Forest-dependent Communities in Ontario (ranked by percentage of forestry workers)

Census Subdivision	Subdivision Type	2001 Population	Labour Force	Forestry Workers	Percent Forestry
Dubreuilville	Township	967	620	375	60.5%
James	Township	467	235	120	51.1%
Terrace Bay	Township	1,950	1,035	475	45.9%
White River	Township	993	555	250	45.1%
Red Rock	Township	1,233	560	230	41.1%
Dorion	Township	442	220	80	36.4%
Nipigon	Township	1,964	1,010	365	36.1%
Aroland 83	Reserve	346	120	40	33.3%
Smooth Rock Falls	Town	1,830	910	290	31.9%
Ear Falls	Township	1,150	635	180	28.4%
Greenstone	Town	5,662	3,020	805	26.7%
Opasatika	Township	325	135	35	25.9%
Brudenell, Lyndoch and Raglan	Township	1,565	650	155	23.9%
Atikokan	Township	3,632	1,790	425	23.7%
Hearst	Town	5,825	3,260	770	23.6%
Dryden	City	8,198	4,390	1,000	22.8%
Chapleau	Township	2,832	1,455	330	22.7%
Espanola	Town	5,449	2,575	575	22.3%
Rainy River, Unorganized	Unorganized	1,605	865	185	21.4%
Mattice-Val Cote	Township	891	380	80	21.1%
Conmee	Township	748	435	90	20.7%
Val Rita-Harty	Township	1,022	485	100	20.6%
Fauquier-Strickland	Township	678	245	50	20.4%
Chapple	Township	910	515	105	20.4%
Baldwin	Township	624	295	60	20.3%
Matachewan	Township	308	100	20	20.0%
Charlton	Town	276	100	20	20.0%
Gillies	Township	522	200	40	20.0%

Note: Forestry Workers is an aggregate of the following NAIC 4 digit classifications:

Code	Description
1131	Timber tract operations
1132	Forest nurseries and gathering of forest products
1133	Logging
1153	Support activities for forestry
3211	Sawmills and wood preservation
3212	Veneer, plywood and engineered wood product manufacturing
3219	Other wood product manufacturing
3221	Pulp, paper and paperboard mills
3222	Converted paper product manufacturing

Source: Statistics Canada 2001 Census of Population

Appendix 5 Forest Renewal Charges for 2002/03 ($ per cubic metre)

MNR Region	Management Unit	Rates Charged by Tree Species or Groups of Species						
		White & Red Pine Grade 1	White & Red Pine Grade 2	Hemlock & Cedar	Other Conifer	Poplar White & Birch	Hardwood Grade 1	Hardwood Grade 2
Northwest	Armstrong Forest	$11.00	$11.00	$2.00	$2.00	$0.50	$8.00	$1.50
	Black Sturgen Forest	$11.00	$11.00	$6.00	$7.00	$0.75	$8.00	$1.50
	Brightsand Forest	$11.00	$11.00	$6.00	$6.00	$0.75	$8.00	$1.50
	Caribou Forest	$11.00	$11.00	$5.00	$5.00	$0.75	$8.00	$1.50
	Crossroute Forest	$11.00	$11.00	$0.00	$5.50	$0.50	$8.00	$1.50
	Dog River Matawin Forest	$11.00	$11.00	$7.00	$7.00	$0.75	$8.00	$1.50
	Dryden	$6.00	$6.00	$6.00	$6.00	$2.00	$1.50	$1.50
	English River Forest	$11.00	$11.00	$5.50	$6.00	$0.75	$8.00	$1.50
	Kenogami Forest	$11.00	$11.00	$5.90	$5.90	$1.00	$8.00	$1.50
	Kenora Forest	$5.00	$5.00	$3.00	$3.00	$0.50	$8.00	$1.50
	Kiashke River	$11.00	$11.00	$6.00	$6.00	$0.50	$8.00	$1.50
	Lac Seul Forest	$11.00	$11.00	$6.50	$3.00	$0.50	$8.00	$1.50
	Lake Nipigon Forest	$2.00	$2.00	$2.00	$2.00	$0.50	$8.00	$1.50
	Lakehead Forest	$6.00	$6.00	$6.00	$6.00	$0.50	$0.50	$0.50
	Nakina North Forest	$11.00	$11.00	$6.00	$2.00	$0.50	$8.00	$1.50
	Ogoki Forest	$11.00	$11.00	$6.00	$2.00	$0.50	$8.00	$1.50
	Pic River Ojibway	$11.00	$11.00	$2.00	$2.00	$0.50	$8.00	$1.50
	Red Lake Forest	$1.00	$1.00	$1.00	$3.00	$0.50	$8.00	$1.50
	Sapawe	$6.00	$6.00	$2.00	$4.00	$0.50	$8.00	$1.50
	Spruce River Forest	$11.00	$11.00	$6.00	$6.00	$0.50	$8.00	$1.50
	Trout Lake Forest	$11.00	$11.00	$4.30	$4.30	$1.00	$8.00	$1.50
	Wabigoon Forest	$11.00	$11.00	$4.30	$4.30	$1.00	$1.00	$1.00
	Whiskey Jack Forest	$11.00	$11.00	$5.00	$6.00	$0.70	$8.00	$1.50
Northeast	Algoma Forest	$5.00	$5.00	$6.00	$6.00	$0.50	$6.25	$1.00
	Big Pic Forest	$11.00	$11.00	$6.00	$6.00	$0.50	$8.00	$1.50
	Black River Forest	$11.00	$11.00	$6.00	$6.00	$0.50	$8.00	$1.50
	Cochrane	$11.00	$11.00	$5.50	$5.50	$0.50	$8.00	$1.50
	Driftwood Forest	$11.00	$11.00	$4.95	$4.95	$0.75	$8.00	$1.50
	Gordon Cosens Forest	$11.00	$11.00	$1.00	$4.78	$0.72	$8.00	$1.50
	Hearst Forest	$11.00	$11.00	$2.75	$5.00	$0.60	$8.00	$1.50
	Iroquois Falls Forest	$11.00	$11.00	$2.00	$3.00	$0.50	$8.00	$1.50
	Magpie Forest	$11.00	$11.00	$5.50	$5.50	$0.50	$8.00	$1.50
	Moose River	$11.00	$11.00	$3.00	$3.00	$0.50	$8.00	$1.50
	Nagagami Forest	$11.00	$11.00	$6.41	$6.41	$0.75	$8.00	$1.50
	Nipissing Forest	$11.00	$6.00	$6.00	$6.00	$0.50	$8.00	$1.50
	Northshore Forest	$1.81	$1.81	$1.00	$1.00	$0.50	$2.00	$0.50
	Pineland-Martel Forest	$11.00	$11.00	$6.00	$4.00	$0.60	$8.00	$1.50
	Romeo Malette Forest	$6.00	$6.00	$4.30	$4.30	$0.55	$8.00	$1.50
	Shiningtree	$7.59	$7.59	$4.15	$4.15	$0.33	$5.52	$1.04
	Smooth Rock Falls	$11.00	$11.00	$0.00	$0.00	$0.50	$8.00	$1.50
	Spanish Forest	$6.50	$6.50	$1.00	$1.00	$0.50	$8.00	$1.50
	Sudbury Forest							
	April 1,2002-Oct. 31,2002	$11.00	$6.00	$6.00	$6.00	$0.50	$8.00	$1.50
	Nov. 1,2002-Mar. 31,2003	$11.00	$6.00	$0.50	$6.00	$0.50	$8.00	$1.50
	Superior Forest	$11.00	$11.00	$4.50	$5.84	$0.50	$8.00	$1.50
	Temagami	$11.00	$11.00	$6.00	$6.00	$0.50	$8.00	$1.50
	Timiskaming	$11.00	$11.00	$1.20	$1.20	$0.10	$8.00	$1.50
	Timmins	$11.00	$11.00	$3.00	$3.00	$0.50	$8.00	$1.50
	Timmins Forest	$11.00	$11.00	$0.00	$0.00	$0.50	$8.00	$1.50
	Wawa Forest	$11.00	$11.00	$6.00	$6.00	$0.50	$8.00	$1.50
	White River Forest	$11.00	$11.00	$1.00	$1.00	$0.50	$8.00	$1.50
Southern	Algonquin Park Forest	$4.75	$4.75	$0.10	$0.10	$0.10	$4.75	$0.10
	Bancroft-Minden Forest	$11.50	$1.50	$2.00	$2.00	$0.50	$8.00	$1.50
	French-Severn Forest	$11.00	$1.50	$2.00	$6.00	$0.50	$8.00	$0.50
	Mazinaw-Lanark Forest	$11.50	$1.50	$6.00	$6.00	$0.50	$8.00	$1.50
	Ottawa Valley Forest	$11.00	$1.50	$6.00	$6.00	$0.50	$8.00	$1.50

Appendix 6 Acronyms Used in this Report

AFA	Algonquin Forestry Authority
AOU	Area of the Undertaking
ANSI	Area of Natural and Scientific Interest
BFOLDS	Boreal Forest Landscape Dynamics Simulator
B.t.	Bacillus thuringiensis
CFS	Canadian Forest Service (a section of Natural Resources Canada)
CFSA	Crown Forest Sustainability Act
EA	Environmental Assessment
ELC	Ecological Land Classification
FIM	Forest Information Manual
FMP	Forest Management Plan
FMPM	*Forest Management Planning Manual for Ontario's Crown Forests*
FOCIS	Forest Operations Compliance Information System
FRI	Forest Resources Inventory
FRL	Forest Resource Licence
FTG	Free-To-Grow
GIS	Geographic Information System
IFM	Intensive Forest Management
LCC	Local Citizens Committee
MFTIP	Managed Forest Tax Incentive Program
MNR	Ministry of Natural Resources (Ontario)
MOE	Ministry of Environment (Ontario)
MOU	Memorandum of Understanding
NCC	Nature Conservancy of Canada
NDPE Guide	*Forest Management Guide for Natural Disturbance Pattern Emulation*
NRCAN	Natural Resources Canada
NWOA	Norfolk Woodlot Owners Association
OLL	Ontario's Living Legacy
PGP	Permanent Growth Plot
PSP	Permanent Sample Plot
Room to Grow	*Room to Grow: Final Report of the Ontario Forest Accord Advisory Board on Implementation of the Accord*
RSA	Resource Stewardship Agreement
SEIM	Socio-Economic Impact Model
SFL	Sustainable Forest Licence
SFMM	Strategic Forest Management Model
STARS	Silviculture Treatment, Assessment and Reporting System
Timber Class EA approval	*Reasons For Decision And Decision, Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario*
T&C	Term and Condition (of the Timber Class EA approval)

Appendix 7 Documents Referenced in this Report

Most of the Ministry of Natural Resources publications referred to below are available online at: http://ontariosforests.mnr.gov.on.ca/spectrasites/internet/ontarioforests/publications.cfm

Most of the Provincial Acts referred to below are available online at: http://www.e-laws.gov.on.ca/

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Forest Resource Assessment Policy. Ministry of Natural Resources, 2003. 40 p.

Forest Resources of Ontario 2001. Ministry of Natural Resources, 2002. 137 p.

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Ontario Wetland Evaluation System: Northern Manual. Ministry of Natural Resources, 1993. 181 p. + app.

Ontario's Approach To Wilderness: A Policy. Ministry of Natural Resources, 1997. 9 p.

Ontario's Living Legacy Land Use Strategy. Ministry of Natural Resources, 1999. 136 p.

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Policy Framework for Sustainable Forests. Ministry of Natural Resources, 1995. 6 p.

Reasons for Decision and Decision: Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario. Environmental Assessment Board, 1994. 561 p.

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Scaling Manual (second edition). Ministry of Natural Resources, 2000. 125 p.

Silvicultural Effectiveness Monitoring Manual for Ontario. Ministry of Natural Resources, 2001. 42 p.

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Statement of Environmental Values. Ministry of Natural Resources, 1995. 12 p.

Timber Management Guidelines for the Protection of Fish Habitat. Ministry of Natural Resources, 1988. 14 p.

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Tourism and Forestry Industry Memorandum of Understanding. Ministry of Natural Resources, 2000. 7 p.

Trees Act. Statutes of Ontario, R.S.O. 1990, Chapter T.20.

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